

ARITHMETIC
ELEMENTARY SCIENCE
INDUSTRIAL ARTS
and WRITING

PART II.
OF THE
COURSE OF STUDIES
FOR THE
ELEMENTARY SCHOOLS OF
ALBERTA

GRADES I to VIII INCLUSIVE



Printed by the Department of Education

EDMONTON
JEFFERY KING'S PRINTED
1922

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Contents

	PAGE
GENERAL INTRODUCTION	5
ARITHMETIC	8
ELEMENTARY SCIENCE, including—	
Nature Study	
Geography	
Hygiene	26
INDUSTRIAL ARTS—Grades I-VI.....	77
ART—Grades VII-VIII.....	135
WRITING.....	156

General Introduction

The Course of Study in the Work of the Modern School.

Everywhere courses of study in the various subjects are under criticism, or are in process of revision. This would seem to indicate that in the opinion of school authorities, generally, the course of study plays a very important part in the process of education. To question the inclusion of a subject in the curriculum, or the content of the course in any subject, is to raise at once the question of aims and objectives in the whole educational scheme. An attempt to revise a curriculum or to re-write a course of study always results in at least a re-examination of the ends being sought through this instrumentality. Assuming that the only source of material to be included in the curriculum is in the results obtained by the race in its attempt to solve its problems up to this moment, it at once becomes apparent that the exact nature of any curriculum is the result of somebody's attempt to make a selection from the great body of race experience. Intelligent selection can be made only when intentional, definite and well defined purposes are clearly in mind.

It is the function of the curriculum to put children in possession of their great intellectual heritage. This can be best interpreted to the child when it is regarded as a summary of the solutions of its various problems which the race has devised up to the present moment. It must, however, do more than this. Not only must the child be made acquainted with the steps by which we have won our present position, but it must be assisted to an intelligent participation in the various activities inevitable to our present social organization. Selection of desirable experiences must be made from all the possible activities which present themselves in the everyday life of the child. Thus, many types of experience valuable in themselves must be passed by, simply because there are others more universally desirable. Conscious curriculum-making implies the intentional selection of material and activities which, together, will result in desirable changes in behavior and the development of wholesome attitudes and ideals. Such is the point of view from which the course has been written.

At the initial meeting of the General Committee, the Minister of Education described its task in these words:

The Department welcomes the opportunity of consultation with and advice from the representative persons who have been named by their respective organizations to form the personnel of this committee. Momentous matters must come before the committee for consideration and recommendation if it is to realize to the full the possibilities of its unique opportunity. It must determine the subjects which are of most worth to Alberta boys and girls. It must plan a course which will make any other than thorough work and the development of habits of industry impossible, no matter what subjects have to be sacrificed. The new course must be flexible and easily adaptable to the varying needs of the children of all parts of the Province. The curriculum must be made to contribute its full share to the development of character, right attitudes and good citizenship in Alberta youth. Finally the committee must produce a piece of work which will meet the demands of the public for an education which is more practical, that will appeal to educators as sound pedagogically and command the enthusiastic support of the thousands of people in this Province who are interested in education.

In general the thought has been that the Course of Study must be a definite handbook and guide to the teacher in interpreting the various subjects. The authors were urged to so organize and write their courses as to afford inspiration to the teachers as they used them. To this and not only has the general scope of the work been clearly indicated in each case, but the ends to be sought have been set forth in considerable detail, and suggestions included as to how material and experiences may be consciously used in the development of desirable habits. Where possible, standards of achievement have been included for the guidance of the teachers, and minimum requirements set down. Methods and procedures of proven worth have been recommended, and references both as to pedagogical and subject matter helps have been supplied, in order that the teacher's task of teaching well so many subjects may be lightened.

In the very nature of the case a course of study so prepared demands more than an occasional reference to ascertain the limits of work for each grade. Each course should be studied until the teacher has mastered the fundamental point of view in it. Only then will the aims, objectives and outcomes towards which he is to work in all he does with the children become clear.

The General Plan of Revision.

In this revision the following subjects are considered as fundamental: English (including Reading, Literature, Composition, Spelling and Grammar); Arithmetic; Elementary Science (including Nature Study, Geography, Hygiene, and Agriculture); Writing; and Citizenship (including History, Civics, and Ethics). Promotion examinations are to be based on these subjects. The secondary group includes the following subjects: Music, Physical Education, and Industrial Arts (Art, Manual Arts and Household Economics).

Directive Courses.

In each subject the material has been organized, with the first six grades as a unit. This was done in order that greater flexibility might be possible to a number of schools through the provision of optional courses. In Grades VII and VIII the great body of material is of standard character, and common to all, but considerable choice is allowed in selecting the balance. The constants, which are to occupy 80% of the time, are as follows: English, Arithmetic, Geography, Citizenship, Writing, Music, and Physical Education.

The directive or optional courses are to occupy 20% of the time, and are organized as follows:

- (a) The General Course—Manual Arts or Household Economics, Agriculture, Art.
- (b) The Agricultural Course—Agriculture, Art.
- (c) The Language Course—Manual Arts or Household Economics, French, Art.
- (d) Industrial Course—Girls: Household Economics, Art.
Boys: Manual Arts, Art.
- (e) Commercial Course—Commercial Subjects, Art.

All courses are of equal value, and admit the successful student equally readily to the secondary school.

Distribution of Time.

On the basis of a week of 1,500 minutes the following is suggested as a fair distribution of time:

Arithmetic	225	Minutes
English—		
Reading and Literature ..	300	
Language and Composition	200	
Spelling	100	
	600	"
Citizenship	125	"
Writing	100	"
Elementary Science	170	"
Music	75	"
Industrial Arts	125	"
Physical Education	80	"
	1500	Minutes

The allotments given above are to include both teaching and seat-time on a given subject.

The complete Course of Study is to appear in three parts:

Part I—English and Citizenship.

Part II—Arithmetic, Elementary Science, Industrial Arts, Writing.

Part III—Music, Physical Education, the Directive Courses.

Arithmetic

Aim.

From the earliest times mathematics has occupied an honored place in the courses of study that have been pursued. Two main aims have existed: first, mental training; second, development of skill in the practical applications of the science of number.

In this course of study the aim is mainly to secure the training that will result in the intelligent and accurate application of the number processes to the problems ordinarily met with in the activities of life. This involves—

- (a) The mastery of the fundamental processes of addition, subtraction, multiplication, and division, so that accuracy and rapidity in the work is attained.
- (b) Information concerning the actual situations in life that give rise to problems in number.
- (c) Knowledge of denominate numbers and the terms used in problems, and the relations that exist between these, such as cost, selling price, loss, gain, insurance, interest, area, volume, etc.
- (d) Training in interpreting the stated problem so as to realize the actual information given, the actual question asked, and the necessary operations to perform.

Suggestions.

- (1) Use the concrete in first presentations to secure clearness of thought. The pupils should see and handle, measure and weigh actual things as the work proceeds.
- (2) Relate the problems with the other school work, and with the home life of the pupils, as much as possible.
- (3) Make use of games and other devices of interest, to secure accuracy and rapidity.
- (4) In grades above Grade I, have daily periods of intensive drill on the number facts covered.
- (5) Have tests for accuracy and speed, with results tabulated at least weekly.
- (6) Strive to develop directness of operation rather than formal methods of solution.
- (7) In developing a new application, use small numbers and explain and illustrate the new terms carefully.
- (8) In drill work, use abstract numbers and strive for intensive work of increasing difficulty.
- (9) In review work, practise the class in stating briefly (a) the exact question asked, and (b) the exact information given in the problem.

- (10) Insist on work being well done at every stage, with clear statements and accurate results. This is the real test of good work in this subject.

GRADE I.

Aim.

To meet the needs in number that a child experiences at this stage, such as counting various things, telling the page in his reader, grouping or separating objects to a total up to ten and to establish a basis of comparison of values through number.

Scope.

- (1) Counting to 100 by 1's, 5's, 10's; by 2's to 20.
- (2) The combinations and separations of numbers up to 10.
- (3) Column addition from blackboard only to a total not exceeding 10.
- (4) Writing and recognition of the number symbols to 100. Pay careful attention to the formation of the symbols to avoid wrong habits in this.
- (5) The use of $\frac{1}{2}$ and $\frac{1}{4}$ orally only, *without symbols* in naming parts of apples, dollars, etc., and also of numbers, as $\frac{1}{2}$ of 4 is 2, etc.
- (6) Recognition of relative values of the numbers under 100, thus picking out greatest and least and arranging in order of size such numbers as 56, 87, 32, 14, etc.
- (7) Recognition of the "families," as 4's, 24, 34, 44; 5's, 35, 45, 55.
- (8) Oral work in addition and subtraction—within the limit in the different spaces as— $34+3$, $44+3$.

Suggestions.

- (1) Associate numbers incidentally with the activities of the other school work, such as counting the children in various groups for different purposes, as supplying the right number of pieces of crayon or pencil, etc., beginning with small groups.
- (2) Associate the number as 4 (or indicated by tapping) with the symbol "4" and the word "four" spoken and written, and have the pupils show the number of splints or other articles from any one of the modes of expressing the number by the teacher and reverse the operations until the symbols and names are firmly associated with the actual numbers.
- (3) Use number in connection with various games and rhymes, as "One, two, buckle my shoe" to get sequence of names.
- (4) Do not give seat-work in addition or subtraction without close supervision, as pupils are so likely to get results by counting rather than by combinations.

- (5) In counting, take particular care that the number named is associated with the group, and not with the individual thing. Children frequently think of the fifth article rather than the group, as "five," etc.
- (6) In having the children find out the results of combinations, do not allow them to count on from the end of the first group as : : and : . . four, five, six, seven, but have them see the group four and the group three forming a new group which by counting from first as a group they find to be seven. Then in the drill work in this, the group seven, : : : ., by using the pointer or drawing lines may be broken up into its combinations and recognized as 6 and 1, 5 and 2, 3 2's and 1, 2, 3's and 1, etc.
- (7) Make frequent use of such games as "I am thinking of two numbers whose sum is 7, 8, etc. Name them," similarly with differences.
- (8) Have frequent drills from blackboard writing, 5 or some other number, then writing another number quickly and erasing both and having just the answer given. Flash cards are valuable used in a similar way. Vary this by having a number written, then another larger one, having the class tell what must be added to the first to get the second.
- (9) Have the number facts brought out from actual situations in games, such as in a contest where the teacher or one child selects a number of buttons or other articles, and the others in succession guess how many. Suppose the child has selected six articles—first guess "You have four buttons." The one who is "I" says, "I have more than four buttons." Second guesses similarly till one guessing correctly is "It." This game may be varied by allowing the questioners to ask "How many more than four?" or "How many less than eight?" etc.
- (10) Bear in mind that it is the situation involving the objects, not merely the use of objects, that makes the presentation really concrete.
- (11) After the various facts concerning a number are learned by actual experience, use the symbols and have the drill from the blackboard or by using flash cards, thus—

Addition	Subtraction	
3 2 1	4 4 4	2 Two two's are four
1 2 3	3 2 1	2 Twice two is four
— — —	— — —	—
4 4 4	1 2 3	4 The half of four is two, etc.

- (12) Require immediate response in this. If there is hesitation, give the answer and have the problem presented concretely again. Apply in little problems involving situations within the range of the pupil's experience. This is, of course, to be entirely oral.

The pupil leaving this grade should have an acquaintance with the numbers as shown and should *know automatically* at least the twenty-five combinations and their associated separations.

N.B.—If thought advisable, school authorities may permit the teacher to postpone the introduction of number symbols until the pupil has a clear understanding of the number concept and a good working knowledge of combinations and separations.

GRADE II.

Aims.

To extend the child's acquaintance with quantity and its measurement by number.

To enlarge and make more definite his vocabulary of number and the operations in number.

To attain automatic memory results in the number facts taken.

Scope.

1. Review and drill on the number facts learned in Grade I.
2. Teach the addition and subtraction facts involved in sums, up to 20.
3. Counting continued so that the relative values up to 1000 are known, by 1's, 10's, 5's in any 100 space; 2's, 3's, 4's, 6's to 36.
4. Writing and recognition of the number symbols to 1000, with place values.
5. Roman numerals up to XII.
6. Use orally $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{3}$ in connection with objects and numbers such as $\frac{1}{3}$ of 6, $\frac{1}{3}$ of 9, $\frac{1}{3}$ of 12, etc.
7. Teach the use and relation of inch, foot and yard; pint, quart, gallon; cent, quarter, dollar; minute, $\frac{1}{4}$ hour, $\frac{1}{2}$ hour, hour, day, week.
8. Teach telling the time, using both Roman and Arabic notation.
9. Teach the use of signs + — \$ cts.
10. Give simple oral problems within the range of the pupil's activities.

In this grade the stress should be on the addition and subtraction facts taken, and various devices should be used to secure the mastery of these combinations and separations, but rapid addition of columns should receive the greatest attention and most persistent drill.

Suggestions.

1. Continue the use of games and of work with objects to give significance to the work in number.

2. Increase the work with symbols, arranging as follows:—

$$\begin{array}{r} 3 \quad 3 \quad 3 \\ 2 \quad 5 \quad 8 \quad \text{then} \\ - \quad - \quad - \end{array} \quad \begin{array}{r} 3 \\ 3 \\ 3 \\ 2 \\ - \end{array}$$

$$\begin{array}{r} \text{Separations} \quad 5 \quad 8 \quad 11 \quad 11 \\ \text{and} \quad -3 \quad -3 \quad -5 \quad -8 \quad -8 \quad \text{etc.} \end{array}$$

Stressing the difficult combinations and separations that occur in work of this grade, such as—

$$\begin{array}{r} 4 \quad 4 \quad 4 \quad 5 \quad 5 \quad 5 \quad 5 \quad 6 \quad 6 \quad 6 \quad 7 \quad 7 \quad 8 \\ 5 \quad 7 \quad 9 \quad 6 \quad 7 \quad 8 \quad 9 \quad 7 \quad 8 \quad 9 \quad 8 \quad 9 \quad 9 \\ - \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad - \\ 11 \quad 12 \quad 13 \quad 13 \quad 13 \\ -4 \quad -7 \quad -6 \quad -5 \quad -4 \quad \text{etc.} \\ - \quad - \quad - \quad - \quad - \end{array}$$

3. Increase the use of addition in columns and extend to in-

$$\begin{array}{r} 7 \\ \text{clude such as} \quad 3 \\ 4 \\ 35 \end{array} \quad \text{so as familiarize with the endings.}$$

Be careful in the addition in columns to have the difficult combinations occur frequently; thus when the combination 7 and 5 is being taken have such repetitions as

7 requiring the adding orally as 12, 15, 17, 22, 25, 32.

$$\begin{array}{r} 3 \\ 5 \\ 2 \\ 3 \\ 5 \\ 7 \\ - \end{array}$$

4. The combinations and the corresponding separations taken should become automatic in this grade, whether spoken, as five and six make eleven, or expressed by symbols, as

$$\begin{array}{r} 5 \\ - \\ 11 \end{array}$$

This is the essential work in this grade and should receive the greater part of the drill given.

5. Pupils or classes who can go beyond the limits laid down here without interfering with the mastery of the work, and without trespassing upon their other subjects, may safely

be permitted to do so. This outline is intended to furnish a reasonable minimum requirement for this grade.

6. The following steps in the treatment of denominate numbers are essential:

- (1) All pupils should learn the use and relation of the different standard units by repeated use in the class-room.
- (2) Following this, pupils should have practice in estimating the measures of various magnitudes in terms of different standard units.
- (3) Pupils should then correct or verify their estimates by using the measures to check their approximations.
- (4) Through oral questioning and problems, practical applications should be emphasized.

GRADE III.

Aim.

1. To secure automatic response to all the combinations and separations involved in addition and subtraction.
2. To add or subtract in problems of several columns with accuracy and increasing speed.
3. To acquire and apply the multiplication and division tables up to 10×10 .
4. To increase the use of mathematical language and number process in one-step problems.

Scope of Work.

1. A thorough review of the number facts taken in the preceding grades.
2. Drill on the addition combinations and their associated separations.
3. Notation to 100,000 with attention to place value.
4. Roman notation to 100.
5. Addition involving carrying within the notation limits.
6. Subtraction within the same limits.
7. Group counting continued, with memory of results up to 10×10 as a basis for multiplication. Take in order—10, 5, 2, 4, 3, 6, 8, 9, 7.
8. Multiplication within notation limits, by numbers not exceeding 10.
9. Division, associated with the multiplication, by numbers not exceeding 10 (within same limits).
10. Unit fractions, associated with grouping and division, using the symbols.
11. Denominate numbers continued—pint, quart, gallon; inch, foot, yard; ounce, pound, hundredweight.

12. One-step oral problems involving the denominate numbers and other problems which are real to the child.

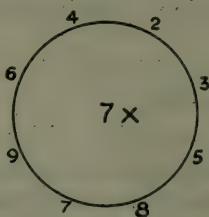
Suggestions.

1. Have work daily on definite number facts for drill, and have recorded weekly tests for checking individual and class progress.
2. Teach the remaining combinations and separations by association with the old—as $6 + 7$ is *one* more than $6 + 6$, etc.
3. Give practice in reading numbers as well as in writing them. Pay attention to the numbers having zeroes such as 5,067, etc.
4. Note the new symbols L and C and the subtractive and additive principles involved in XL, XLV, etc.
5. Increase the lengths of the columns and give practice in problems involving numbers reaching different spaces as—

$$\begin{array}{r} 693 \\ 5764 \\ 28 \\ 476 \\ \hline \end{array}$$

6. Drill in such as $\begin{array}{r} 5507 \\ 518 \\ \hline \end{array}$ involving zeroes and carrying.

7. Give drill involving the use of the different multiplication tables, using circles, etc., on blackboard, as in annexed diagram, having pupils starting anywhere on the circle, and naming the products.



8. Use similar drills for division and introduce numbers involving remainders.
9. Introduce the short division form and have pupils interpret the question and result obtained, thus:—

$$\begin{array}{r} 5 \\ 4 \overline{) 23} - 3 \end{array}$$

Twenty-three is 5 4's and 3 over,
also 23 is 4 5's and 3 over.

Continue short division within the limits of the notation in the same way.

10. Make clear the different ways of expressing division:—

$$\begin{array}{r} 7 \\ 5 \overline{)35} \end{array}, 35 \div 5 = 7 \text{ and } \frac{1}{5} \text{ of } 35 = 7 \text{ and have drill in all}$$

forms using the expressions one-fifth, etc., and also the symbols freely.

11. Establish the relation of the units in denominate numbers by actual use of the units, and by reference to situations involving the relations rather than by mere memory of a table. Thus, the pupils should measure their books in inches, their desks in feet and inches, and the blackboard, etc., in yards, feet, and inches; and should express the measurements in the different denominations as 3 yds. 1 ft. 6 in., or $3\frac{1}{2}$ yds. or 3 yds. $1\frac{1}{2}$ ft., etc., so that the relation is established by repeated use. Similar relations should be established in respect to a pint being $\frac{1}{2}$ a quart, a gallon 4 quarts, a quart 2 pints or $\frac{1}{4}$ gallon, etc. Have actual lengths permanently on the blackboard, or elsewhere in the class-room.
12. Adapt the problems to situations that may be clearly understood by the class, so that the pupils may realize more definitely the purpose of the study of Arithmetic. No written solutions should be required in this grade.

GRADE IV.

Aim.

A thorough understanding of the four fundamental processes. Accuracy and increasing speed in these processes. A knowledge of fractional parts working from the unit fractional part.

The especial work of the grade is the mastery of long division.

Scope.

1. Addition with checks.
2. Subtraction with checks.
3. Multiplication with checks.
4. Division (short and long) with checks.
5. Simple fractions extended beyond the unit fractional part.
6. Denominate numbers extended to pint, quart, gallon, peck, bushel; seconds, minutes, quarter-hours, half-hours, hours, day, week; ounces, pounds, hundredweight, tons.
7. Notation to include millions.
8. Roman notation as needed for dates.
9. Problems, chiefly oral, involving denominate numbers, these problems to be taken during the school year, at the time when the denominate numbers are being taught.

Suggestions.

1. In Addition give attention to the following:—

(a) Special drill on the difficult combinations:—

2	3	3	4	4	4	5	5	5	5	6	6	6	7	7	8
9	8	9	7	8	9	6	7	8	9	7	8	9	8	9	9
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

(b) Practice in additions by endings. $\begin{array}{r} 9 \\ 22 \end{array}$ $\begin{array}{r} 9 \\ 32 \end{array}$ etc.

(c) Form the habit of checking results by adding columns in reverse order. $\begin{array}{r} 527 \\ 6935 \end{array}$

(d) Make use of such examples as $\begin{array}{r} 29 \\ 4768 \end{array}$ etc.

(e) Give simple concrete problems involving addition of dollars and cents, as well as problems involving other denominate numbers.

2. In Subtraction give attention to:—

(a) Drill for accuracy and speed.

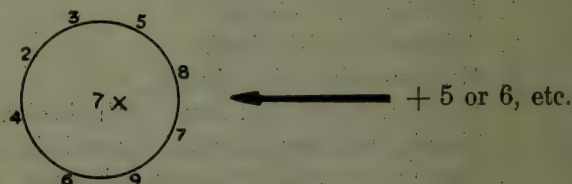
(b) Practice in subtraction involving endings:— $\begin{array}{r} 31 \\ 8 \end{array}$ $\begin{array}{r} 41 \\ 8 \end{array}$

(c) Form habits of checking results by addition of remainder and subtrahend. Use the names of minuend, subtrahend and remainder as needed, but do not give formal definitions.

(d) Problems as in addition.

3. In Multiplication give attention to:—

(a) Emphasis on products with addition, employing number circles as well as regular tables; thus,
 $(7 \times 9) + 5 = 68$.



(b) Multiplication by 10, by 100, etc., by adding zeroes.

(c) Products to 12×12 .

(d) One-step problems, including those involving Canadian money.

(e) Use the names multiplicand, multiplier, and product as needed without formal definitions.

- (f) The placing of the partial products with care when there are zeroes in the multiplier.

4. In Division:—

- (a) Use names as needed—divisor, dividend, quotient, remainder, and have the class see in such an example as

33
 $\overline{7)235-4}$ that the result shows that there are 33 7's
 in 235-4, also 7 33's in 235-4.

- (b) Establish the habit of checking the results.
 (c) In long division, begin with divisors having small numbers in the units, and place so that the difficulty in getting the trial divisor is approached gradually.
 (d) Give problems in finding the dividend from such forms

as $\begin{array}{r} 14 \\ 23 \end{array}$ $\begin{array}{r} 16 \\ 15 \end{array}$ -4 etc., and have work checked

by division.

5. Simple applications of fractions should be given associated with division and multiplication. No formal teaching of operations with fractions is expected.
6. Associate the work in denominate numbers with situations that the class may understand.
7. Accustom the class to marking off the numbers into periods as 467, 316, etc., giving especial attention to the reading and writing of numbers in which the zeroes occur, as 340, 016, etc.
8. Teach the new symbols in Roman notation and note carefully the method of representation of such numbers as XCV, $100-10+5$; CDLX, $500-100+50+10$. An exhaustive treatment of the writing of numbers in Roman notation is not desired. Teach the principles involved and develop the ability to read chapter numbers, dates, etc., which may be met with.
9. Do not hurry the problem work, but endeavor to get clear oral statements of what is known, what is required, and what operation must be used. Thus in such a problem as—
 "What is the cost of 5 books at 75c each?" the pupils should be led to see and understand that the cost of 5 books will be five times as much as the cost of one and will be found in this instance by multiplying 75 cents by 5, or taking 5 times 75 cents.

Similarly in such a problem as, "The cost of 6 cows is \$240, what is the cost of one cow?" pupils should be led to see that the cost of one cow will be one-sixth of \$240, and will be found by dividing \$240 by 6.

Also in the problem, "One book cost 5 cents, how many such books may be bought for 75c?" Pupils must be led to see that since 5 cents will buy one book the number of books 75 cents will buy will be the number of times 5 cents is contained in 75 cents; it is found by dividing 75 by 5.

In this work use comparatively large numbers, so that the pupils must state the process and do the work before the answer is apparent. The statements may be shortened as soon as the teacher is satisfied that the reasoning is logical, so that later such a statement may be accepted as "The answer is 5 times 75 cents, or 75 cents multiplied by 5" and "The answer is $\frac{1}{6}$ of \$240 or $\$240 \div 6$," etc.

10. The pupils leaving this grade should be able to add or subtract with accuracy and speed, and also to multiply and divide by numbers expressed by two or three digits with accuracy. Work in the mechanical operations is the main feature of the work in Arithmetic in this grade.

GRADE V.

Aims.

1. To continue development in speed and accuracy in addition, subtraction, multiplication, and division.
2. To impart a working knowledge of a few simple applications of number.
3. To increase acquaintance with the technical terms and signs of arithmetic.
4. To train in accuracy of thought and statement.

Scope.

1. A careful systematic review of the work of the preceding grades, with considerable attention to checking the work.
2. Denominate numbers—inch, foot, yard; yard, rod, mile; sq. inch., sq. ft., sq. yd., acre, sq. mile; acre, quarter section, half section, section; cu. foot, cu. inch, cu. yard; pint, quart, gallon; gallon, peck, bushel; ounce, pound, hundred-weight, ton, weight of a bushel of wheat, oats, barley, rye, flax, potatoes; units of time, miscellaneous tables in common use, cents, quarters, half-dollars, and dollars.
3. Reduction and work involving short problems in addition, subtraction, multiplication, and division of denominate numbers. Do not give problems involving changes not likely to be needed, such as reducing acres and square miles to square inches; bushels to pints, etc.
4. Fractions—relations of $\frac{1}{2}$ $\frac{3}{4}$ $\frac{5}{8}$ $\frac{6}{8}$ $\frac{1}{12}$ $\frac{1}{24}$, $\frac{1}{4}$ $\frac{3}{8}$ $\frac{5}{12}$ $\frac{7}{24}$, $\frac{1}{3}$ $\frac{2}{6}$ $\frac{4}{12}$ $\frac{8}{24}$ with addition and subtraction.
 $\frac{1}{6}$ $\frac{1}{12}$, $\frac{1}{12}$ $\frac{2}{24}$ developed from divisions of lines or rectangles

and from divisions of numbers as $\frac{1}{3}$ of 12, $\frac{2}{3}$ of 12, $\frac{1}{8}$ of 24, $\frac{3}{8}$ of 24, etc., with both concrete and abstract numbers of rectangles.

5. Areas and volumes of rectangular solids.
6. Bills and accounts of a simple nature, involving form and calculation.

Suggestions.

1. Have systematic daily drills on definite combinations and other number facts, and tabulated monthly tests in the work for speed and accuracy.
2. Relate the denominate numbers as they are ordinarily used:—inch, foot, yard; yard, rod; yard, mile; rod, mile; sq. in., sq. ft., sq. yard; rod, acre; acre, quarter-section, section, etc. Show the development of measures of area and volume from the measures of length by actual measurements of sq. ft. and sq. yd. on the blackboard, and sq. rod on the floor or in the school yard. Leave these units of area for constant reference.
3. Relate the work in addition, etc., of denominate numbers with ordinary addition involving carrying, thus:—
 2 yds. 2 ft. 7 in. 227
 1 yd. 1 ft. 8 in. 118
 in adding the eight and seven the result is fifteen, which is put down in the units' place and carried to the tens' place, similarly the 7 and 8 inches gives 15 inches, which is 1 foot and 3 inches left. Then question: "What shall we do with the 3 inches and what with the 1 foot?", etc. Deal similarly with the other operations, noting that the relation is not constantly *ten* as in simple addition, but varies with the units involved.
4. Treat the fractions as denominate numbers that may be changed to other denominations without change of value. Thus—just as 1 foot may be expressed as 12 inches so $\frac{1}{2}$ i.e. 1 half may be expressed as 2 quarters or six-twelfths ($\frac{6}{12}$) or 12 twenty-fourths ($\frac{12}{24}$) Give plenty of oral work in such changes before written work.
5. Develop the area by working from actual measurements of rectangles drawn by the pupils and marked off in squares, and get them to see that the *number* of square units is the product of the *numbers* that are used in giving the dimensions.
 Do not permit such statements as 6 in. multiplied by 7 inches = 42 sq. inches. Have rather such statements as the area of a rectangle 6 in. $\times$ 7 in. is (6 $\times$ 7) sq. inches. Thus:—The area of a rectangle 6 inches *by* 7 inches is six times seven, that is, 42 *square inches*.
6. In bills and accounts stress the need of neatness, systematic form and accuracy, and have as much as possible of the calculation done without the use of the paper and pencil.

7. Give practice in oral statement of what is to be done in problem work, and encourage original written solutions in which the thought is clearly expressed.

GRADE VI.

Aim.

1. To increase speed and accuracy in the mechanical operations.
2. To secure a mastery of the fractions used in the ordinary activities of life.
3. To develop power in the solution of problems.

Scope.

1. A systematic review of definite number facts taken in the preceding grades, with especial attention to checking the results.
2. Bills and accounts continued, personal accounts.
3. Practical problems based on denominate numbers, areas, and volumes.
4. Fractions systematically taken involving:—
 - (a) Factors; multiples; cancellation; tests for divisibility by 2, 3, 4, 5, 6, 9, 10; common divisor, greatest common divisor, common multiple; lowest common multiple by factoring and inspection.
 - (b) Addition of fractions.
 - (c) Subtraction of fractions.
 - (d) Multiplication of a fraction by a whole number.
 - (e) Multiplication of a fraction by a fraction.
 - (f) Multiplication of a fraction by mixed numbers.
 - (g) Division of a fraction by a whole number.
 - (h) Division of a fraction by a fraction.
 - (i) Division of a fraction by mixed numbers.
5. Concrete applications of work with fractions.

6. Use and meaning of the following percentages:
100%, 75%, 50%, $33\frac{1}{3}\%$, 25%, 20%, $12\frac{1}{2}\%$, 10%, and 5%, with fractional equivalents.
7. Problems from data within the experience of the class.

Suggestions.

1. Continue the systematic daily drills with problems of increasing difficulty and length. Have weekly tests, with results tabulated and charted. Use standard tests at least three times per year, and keep the results for comparison on a graph.
2. Increase the difficulty in the calculation in the bills and accounts, and maintain care regarding the form and neatness of work.
3. Use calculation of areas in problems likely to be met with, such as areas of fields, gardens, sidewalks, walls, etc., similarly with volumes of coal or grain bins—excavation for basements, etc.
4. (a) Have considerable oral work in changing fractions from one denomination to another. Avoid the use of problems involving unusual fractions, such as adding

$$\frac{7}{23} \text{ and } \frac{11}{29}, \text{ etc.}$$

- (b) In addition and subtraction have oral work associated with denominate numbers, as 3 feet + 2 feet, 3 sevenths + 2 sevenths, then the fractional form written

$$\frac{3}{7} + \frac{2}{7}, \text{ etc.}$$

5. In work in addition or subtraction with mixed numbers do not change to improper fractions, but proceed as with denominate numbers.
6. In developing the common divisors and multiples, proceed from taking the factors of the numbers separately, thus—

$$\begin{array}{r} 2 \overline{)12} \\ 2 \overline{)6} \\ \hline 3 \end{array} \quad \begin{array}{r} 2 \overline{)16} \\ 2 \overline{)8} \\ 2 \overline{)4} \\ \hline 2 \end{array} \quad \text{to taking them}$$

$$\text{together, thus } \begin{array}{r} 2 \overline{)12} \quad 16 \\ 2 \overline{)6} \quad 8 \\ \hline 3 \quad 4 \end{array} \quad \text{etc., so that the class will}$$

realize that the new form is merely to save time and space in working.

7. In work in multiplication and division of fractions by whole numbers, stress the denominate idea of fractions, thus:—
8 times 3 books are 24 books, 8 times $\frac{3}{5}$ i.e. 8 times 3 fifths are 24 fifths or $\frac{24}{5}$. Endeavor to get the method in division of fractions rationalized by illustration and explanation, then stress facility in operation without expecting or requiring the class to explain the process.
8. In problem work require clear statements of—
 - (1) What is given or assumed to be known.
 - (2) What is required.
 - (3) The statement of the operations using signs.
 - (4) The abstract work
 - (5) The answer in sentence form.

GRADE VII.

Aim.

1. To more firmly establish accuracy and speed in the mechanical processes, including work with fractions.
2. To extend the work in fractions, with especial attention to decimal fractions.
3. To increase the ability of interpreting the ordinary everyday problems involving the application of number.
4. To develop greater ability in estimating results, and to encourage the habit of checking answers.

Scope.

1. A systematic review of the work of the preceding grades.
2. Daily drill in mental arithmetic, and regular periodic tests with tabulated results of work in the mechanical processes.
3. Review and rationalization of the place values in our notation with the extension to the *right* of the decimal point.
4. Reading and writing of decimals.
5. Addition and subtraction of decimals.
6. Multiplication of decimals.
7. Ways of indicating division—division sign, common fraction—ratio. Review changing of fractions to different denominations, noting principle that multiplying or dividing both terms of an indicated division does not affect the value.
8. Division of decimals.
9. Problems involving decimals as the different processes are taken.
10. Changing common fractions to decimals. (Do not extend work in recurring decimals.)
11. Percentage—a specific application of decimals and fractions. A fraction with a constant denominator indicated by a sign (%)—

- (a) Percentage equivalents of fractional parts likely to occur in ordinary calculation.
- (b) Finding the per cent. of a number.
- (c) Finding what per cent. one number is of another.

12. Problems—

- (a) Profit and Loss.
- (b) Simple interest.
- (c) Application of areas and volumes (rectangular only).
- (d) Business bills and accounts.

Suggestions.

1. Drill on the four processes in whole numbers and in fractions, giving close attention to individual weaknesses.
2. Use the Curtis or some standard test about three times a year (September, January, June).
3. Decimals should not be approached as a new subject. Recall the place value in ordinary notation, then the writing of dollars and cents—have the number of cents expressed by common fractions, thus $\$3.17 = \$3 \frac{17}{100}$, then discuss the meaning of the form $\$3.17$.
4. Practise changing common fractions to decimals by inspection and calculation.
5. Give a thorough drill in reading and in writing decimals, having the pupils think how many places, then writing from left to right, placing the decimal point first, thus:—In writing seventeen thousandths, 17 gives *two* places, thousandths requires *three* places, therefore we must have .017 or say (point, zero, one, seven, if given orally). The Curtis tests may be obtained from the Libraries Branch, Department of Education, Edmonton.

GRADE VIII.

Aim.

The work of this year is along the line of definite business applications of Arithmetic. The subject should be so taught as to apply to the genuine problems of life met within ordinary occupations of the community.

Scope.

1. Continued systematic drill in the fundamental operations with integers, fractions, and decimals.
2. Denominate numbers. Review relations and give problems in keeping with ordinary business needs.
3. Squares of numbers and square root by factoring and by square root process.
4. Applications of Percentage—
 - (a) Profit and Loss.

- (b) Interest.
 - (c) Commission, limited to direct buying and selling commission, and proceeds.
 - (d) Trade Discount, limited to two successive discounts.
 - (e) Taxes.
5. Business forms.
- (a) Cheques.
 - (b) Promissory Notes.
 - (c) Bills and accounts.
 - (d) Receipts.
6. Mensuration.
- (a) Rectangular figures and solids (areas and volumes).
 - (b) Triangles, area given base and perpendicular, right-angled triangles.
 - (c) Circles and cylinders (areas and volumes), with applications in excavating, building, painting, etc.
 - (d) Approximate measurements of quantities of hay in stacks (optional).
8. Solution of problems.
- (a) Estimating approximate results.
 - (b) Analysis of procedure.
 - (c) The use of the Unitary Method continued as a ratio expressed fractionally.
 - (d) Simple graphs.

Suggestions.

1. Have a definite aim for each week and day, and use standard tests three or four times a year and chart results. *Do not sacrifice accuracy for speed or for any other feature of the work.*
2. Keep the work with denominate numbers practical.
3. Give situations where a knowledge of square root is needed, then teach the process.
4. In applications of percentage apply directly, thus:

7% of 85 is 85; also $4\frac{1}{2}\%$ of 56 is 56 after making

$$\begin{array}{r} 7\% \\ \hline 5.95 \end{array} \qquad \begin{array}{r} 4\frac{1}{2}\% \\ \hline 28 \\ 224 \\ \hline 2.52 \end{array}$$

the idea clear that per cent means on the hundred. Do not change to the equivalent values $\frac{7}{100}$ or .07 as the sign should be interpreted directly to require the marking off of two places of decimals. Give practice in the use in the *most convenient form* of such common percentages as $33\frac{1}{3}\%$, 25%, $12\frac{1}{2}\%$, 10%, 5%, etc., using the fractions $\frac{1}{3}$, $\frac{1}{4}$, etc., as convenience suggests. Give practice in the

use of fractional percents as $\frac{1}{4}\%$, $\frac{1}{8}\%$, $2\frac{1}{2}\%$, $3\frac{1}{4}\%$, etc.

5. Insist on neat appearance and accurate work in the business forms.

6. Be careful that the work is visualized before calculation is commenced. Have frequent use made of plans drawn to scale.

In measuring ordinary stacks of hay use such formula as (Overthrow of stack less the width), multiplied by measure

2

of length x by measure of width to give the *approximate number* of cubic feet. Then take 343 or 420 or 512 cu. ft. to the ton according to the kind of hay and length of time of settling.

7. The giving of estimates and approximate results requires a grasp of the actual situation involved in the problem. Do not require the constant reduction to the unit, but encourage independent solutions and the most direct means for reaching the result. Insist that each statement made be perfectly clear. Encourage charts or graphs showing changes in temperature, proportions of costs, populations of cities, etc.
8. In this grade the Unitary Method may be shortened by the elimination of the second step; thus, after thorough understanding is established, have the second step mental only, and carrying the written solution to the concluding line, thus: 3 horses cost \$250.

Mentally, 1 horse costs $\frac{1}{3}$ of \$250.

Then 9 horses cost $\frac{9}{3}$ of 250, etc.

9. Pay particular attention to the statement of aim in the general introduction to this course.

Elementary Science

INTRODUCTORY

The course in Elementary Science embraces Nature Study, Geography, Physiology and Hygiene for the First Six Grades. In Grades VII and VIII, Geography and Physiology are continued, and Agriculture introduced (to take the place of the Nature Study). To this subject 170 minutes have been allotted. The distribution as between the various divisions will naturally vary with the grades, but it is expected that approximately forty minutes per week will be devoted to Physiology and Hygiene throughout the course.

The chief criticisms of the old course centred around the quantity of material included, and the lack of specific direction. At first glance it may appear that the present course is open to the former objection. Such, however, is not the case. The committee is able to present a course closely related to the child's pre-school experience, having its basis in his every-day environment, and so organized as to assist him in making more effectively those adjustments which he will have to make anyway. The many suggestions for the treatment of the material have made the course appear rather long.

In this course, formal Geography is postponed till Grade V. The work in this grade, as well as that of Grade VI, is based on Alberta, Canada, and North America in general. In Grade VII there is a general survey of the continents, while the work of Grade VIII deals entirely with the British Empire. The committee believes that this will provide a well-balanced course, suited particularly to the needs of the elementary school child. The outline in Physiology and Hygiene is very complete. This emphasis is quite in accord with the committee's belief that not only is physical education necessary, but a definite understanding of elementary anatomy, simple laws of health, and first aid, as well.

What is Elementary Science?

The term "science" implies a systematic attempt to set forth the laws which govern the world, to which man must adjust himself in the ordinary process of living his daily life and performing his daily tasks. The attempt must necessarily be simple and elementary in the Public School grades. The meaning of the term "elementary science" is more definite than the meaning

commonly conveyed by "nature study." All that was implied in nature study is included in elementary science. The subject matter includes phases of plant and animal life, and natural phenomena in the world about and in the sky above, selected because of relational values to life. It comprehends the field of geographical phenomena, which (when specifically included in elementary science) carries the implication that cause and effect are of greater importance than mere nomenclature. The structure, function, and care of the human body is legitimately a phase of elementary science, having an intimate relationship to the underlying principles governing all bodies in the animal kingdom. The selection from this broad field must be made to correspond with the abilities and capacities of the child, the aims being to quicken and develop observational powers, to lead to intelligent relationships with environment, and to develop an attitude of admiration and reverence for the Great Creator who made and ordered it all.

Why is Elementary Science Included in the Course of Studies?

Man cannot live unto himself alone. His existence, in a physical sense, is dependent upon the air he breathes, the food he takes, and the shelter he secures for himself from his environment. Every movement he makes, every form he changes, every thought he thinks, every emotion he feels, is based upon his experience with his fellow-beings, and with his material surroundings. His whole being is defined in terms of his environment. He must respect the laws which govern the world about him. To disregard them is to invite discomfort, inconvenience, loss, and even destruction. Narrow experience, limited knowledge, and faulty judgments lead to poor adjustments of the individual to his environment, and cater to ignorance and superstition.

Every child born into the world has a birthright to the accumulated experiences and judgments of his fathers. This privilege becomes his responsibility to test, to use, to supplement, and to pass along. To be without this treasure is to be in the condition of primitive man. It is the function of the home to first lead the child into this inheritance, but with the extensivity of the range of the store, and because of the increasing complexity in the environment, the organized school is called into existence among whose main functions is that of aiding the child to make smooth working adjustments with its surroundings.

In life, a good body is a fundamental requirement. To maintain this, an intelligent understanding of the mechanism of the body and how it works, and of the fundamental laws of health, is a necessity. To smoothly and efficiently make adjustments within a material environment, a knowledge of that environment is essential. Life, either plant or animal, is understood only in terms of the life and experiences of the one who learns. The inanimate world is of interest and of value to man only in so far as it is related to him in life. These relationships may not be

obvious at first, but investigation may discover most important and significant values. The relationship of the mosquito to yellow fever, and man's good health, is not obvious; but science has revealed it to be most real. Science, then, is concerned with the data pertaining to the structure, function, and care of the human body, with all natural phenomena, and with the relationship of man to these phenomena. This includes human physiology and hygiene, nature study, and geography.

The Aims in Elementary Science.

The child must be made conscious, early in his career, that he is a part of a great system, into which he must fit. He must expect direction in the process of adjustment until he attains to the period of independence. He should know his own body, and have a working knowledge of the great and fundamental laws of hygiene, not only as these pertain to himself, but as they operate among his fellows and in the world at large. He should be made to feel a personal responsibility to his neighbor and to his environment. His eyes should be opened, and his being tuned to appreciate the beauty of the world in which he is placed. The sights of nature in sky and field, the harmonies of color and of form, should become his joy. The songs of birds, the rustle of leaves, and the roar of the waterfall should bring him pleasure. An attitude of reverence should be developed, and a soul-appreciation of the charm of nature born. The love of the "out-of-doors" is natural, although it may be drowned by other interests as the child develops, unless it is given specific attention. A definite store of information should be acquired which would have utilitarian value "in a social way, in his reading, and in his interpretation of life situations." These data will serve the additional end of being of immediate value in establishing bases upon which to build the superstructure of science in later years. Besides the appreciation for the beautiful in nature, and the acquisition of useful data and the formation of an attitude of reverence and respect, it is fair to expect that the work in elementary science should lead to the formation of certain scientific habits; for example, the habit of looking for things, the habit of withholding judgment until a broad basis of experience or data has been secured, the habit of experimentation and investigation, and the frame of mind which will tolerate nothing but the truth. Elementary science may be said to have in the final analysis an ethical end.

The Material.

For a course of studies having application over a large province, no definite assignment of material is possible, only a general lead can be given. The subject matter for study must of necessity be selected from what is available. Actual material should be used, and this where possible should be in the hands of the child. For physiology and hygiene the material is always at hand. Reference should be constantly made to the pupil's own body, and to the body of his associates. The child should be given, where

possible, original sensations, whether in class room or out-of-doors. Much can be done in this respect by giving directions for observations to be made during recess periods, and when going to and from school. Definite objectives should be kept in view at all times. Care should be taken not to ramble all over the field without having a definite end in view. Simple experiments should be made, looking for definite results. The interesting and the attractive should be sought, that the subject may not become dull and dry. An aquarium in a glass jar, or in an enamel pail, can be set up, and in it many interesting observations made. A vivarium can easily be constructed from a wooden box, some soil, and a piece of netting. A museum can be organized to contain plant types and mounted animals—such as mammals, insects, pretty stones, seeds, and curios. Seeds can be sprouted in tin cans, and their growth followed. Bulbs may be made to bloom and cuttings of plants started. Garden projects at home and at school can be encouraged, and the products exhibited at school fairs and exhibitions. The raising of stock (such as calves, colts, pigs, sheep, and chickens) can be stimulated, and the results followed as school exercises. The care of pets—such as cats, dogs, rabbits, and pigeons—is valuable experience to obtain by encouragement from the school. Records of plant and of animal life may be kept in a school-book or as individual records. Calendars recording weather, hygiene and health charts, maps, globes, sandbox, etc., are pieces of equipment necessary for properly organizing elementary science.

In the first four grades, the work must of necessity be of an informal nature. Material should be selected from what is available, but definite experiences should be given. A field trip followed by a picnic is a wonderful experience for little ones. In these grades, geography is not necessarily separated from general environmental study. From Grade V up, more systematic effort is expected. Well defined ends must be kept in view, accurate data secured, and definite records made. Those phases of any topic that have direct relationship to the life of the child considering the topic are always of great importance. These should be sought for, and discovered wherever possible. In these grades, Geography becomes a separate subject. Physiology and hygiene will also have a definite place made for them on the time table, apart from nature study.

Organization in Ungraded Schools.

In the ungraded school, groupings must be made. The first four grades may very well be combined for their work in elementary science. Discrimination may be made among individuals in the different grades, by expecting less from the juniors than from the seniors. The former may be addressed by simpler questions. Grades V and VI may very well form one group by making certain adjustments, and Grades VII and VIII another, making in all three groups. In a heavy ungraded school, in which there is a settled personnel of teacher and pupil, it might be possible to organize the school into two groups, and get along fairly well.

This could be done by organizing the first four grades into one group, and varying the work covered from year to year, and yet keeping within the limits indicated herein. In the four senior grades the same thing might be done, but the subjects within the elementary science would have to be considered separately. This will be more difficult in those schools having Grade VIII candidates writing departmental examinations, for whom special attention will be required, because of the definite demands of the examination. Such grouping for senior grades is inadvisable, excepting under exceptionally favorable conditions.

Suggestions.

The following notes are not intended for rigid adherence by anyone. They are merely suggestions which may be followed as the inclination of the teacher may direct, and where conditions render them practicable. They are compiled with the hope that they may be suggestive and helpful in making this subject a live one in the elementary schools.

1. In an aquarium may be kept snails, tadpoles, minnows, gold-fish, caddis worms, water beetles, dragon-fly nymphs, mosquito wrigglers, and salamanders. Some green algae or water plants should be kept in the aquarium to maintain its sweetness. An enamel pail or a glass sealer may make a very good aquarium. For a portion of the day the aquarium should receive direct sunlight.
2. In the vivarium may be kept frogs, toads, mice, snakes, gophers, larvae of butterflies and moths. The soil in the vivarium should be maintained at the moisture and temperature conditions most favorable for plant life.
3. Frogs' eggs, toads' eggs or salamanders' eggs may be found in sloughs and ponds in early spring. These make most interesting subjects for study in their development. Keep in a glass jar, with water liberally supplied with algae, which for some portion of the day receives direct sunlight.
4. It is a good method to encourage the children to bring their pets to school at times when they may be made the subjects of study.
5. Encourage the collection, killing by proper means, and the preservation of good specimens of insect life. These can be mounted in a frame, on a cotton wool bed, under glass, and become attractive material for interesting children in this important department of study.
6. A plant press is very easily made in the corner of the class room from old newspapers weighted down with a box of stones. The papers should be changed frequently, to dry the specimens quickly and thoroughly. The children may be made very interested in actually doing the work in connection with this press as a part of school activity.

7. Samples of the weed seeds in a community, kept in uniform vials, make an attractive exhibit. Many valuable data may be gathered by this means.
8. Children living near large centres of population should be warned about the indiscriminate picking of wild flowers. Certain beautiful and uncommon varieties may be exterminated, if care is not taken. The child should be taught to enjoy the flower without actually picking it. The height of the joy is attained with the discovery of the specimen, and a plucked beauty may very quickly become a wilted weed.
9. The drawing of plant forms, tree forms, leaf outlines, flowers, and fruit in color is a device for challenging observation. Birds, insects, and other animals can be made subjects for the same type of exercise. Conventionalized designs, involving nature motives, challenge observation.
10. A box with a glass side is a splendid device for sprouting seeds, to observe the root formations and developments beneath the soil.
11. Bookmaking—to include notes, observations, drawing, clippings of pictures and of printed matter, and actual dried specimens—is an attractive exercise for some children. These books may be appropriately decorated.
12. Oral or written descriptions of storms, landscapes, sunrises and sunsets, moonlight views, trip to farm, or lake, or mountain, are valuable exercises.
13. Competitions involving collections, observation, products of the garden or farm, including stock and pets, chicken-laying contests and feeding contests, and stimulating.
14. Processes of manufacture or of industry, such as threshing, making flour, coal-mining, and soap-making, are full of interest and suggestion to children. Some very fine moving picture films, showing industrial processes, are available. These are instructive.
15. Direction to pupils in obtaining literature on the subjects of study is valuable. The child is led into habits of independence in acquiring the experiences of other people without the aid of a director. Government reports contain frequently material of the greatest value. Lists of available reports, which are supplied free, may be obtained on application by letter to the Publication Branch of the Department of the Interior, Ottawa.
16. Pictures are assets in studying science and geography. Some very fine slides are available for use in the projection lantern. Some of these are supplied on very easy conditions from the Extension Department of the University of Alberta, Edmonton. Moving picture films may also be available from the same source. They are valuable in

establishing impressions in connection with a variety of topics. *The National Geographic Magazine* contains some beautiful illustrative matter that will be helpful from time to time in geography studies.

17. Wherever it is possible to set an experiment, it is excellent method to do so. Experiments may be conducted within the class room, adapting tin cans, boxes, etc., to the ends sought, e.g., sprouting weed seeds, relative rate with which pigweed and radish plants will grow from seed under similar conditions, effect of sunlight on plants as shown by growing plants in the sunlight and in a shady location, feeding one plant with ammonia solution and leaving another to grow without the solution.
18. Valuable experiments may be worked out in the school garden or on the school grounds, e.g., making a landscape of hill and valley and sprinkling with water to imitate rain and its effects, filling a tin can with water and sealing tightly and leaving it out of doors to freeze, setting up a rain-gauge, making a weather-vane, a sun-dial, and many more.
19. The neighborhood may have some favorable condition for interesting and valuable experiments, e.g., a stream may be eroding its bank, wind may be carving the side of a precipice, crops may be sown on the north side of a ravine and on the south side, and the rate of growth or ripening observed, the protection snow renders the soil and plant life, air currents about a bonfire, and such like.

GRADE I.

General Suggestions.

In this grade the attention of the child should be challenged by natural objects, selecting those that have appeal because of their form, beauty, odor, novelty or movement and interpreting them as part of the play-life of the child. Some lessons may be made to associate around the doll or the "Teddy bear." The world is a great play-house stocked with beautiful playthings. Some of these run, some hop, some fly, some swim. The sky is the roof which covers the big room like a round tent, and under it is found much for the child, hill and tree, water and grass, pets and birds and many other things. Sometimes the playroom is cold, and again hot, wet, and dry, dark and light, cloudy and clear. These all have effects which must be prepared for in the child's life. The flight of birds, the play of animals, the call of animals are all appealing topics. Imitation and "let's pretend" is a suggestion for method. Games appeal in which

those participating imagine themselves to be flowers or birds or animals. It is easy to attribute to the objects in environment humanized emotions, and in this way establish relationships and kindly feeling. It is easy to establish an attitude of reverence. The walk and the talk and the little picnic out of doors will never be forgotten throughout the lives of little people. Take possession of certain spots in the country or park, and call it theirs. This ownership by groups may be made very useful in establishing a later common ownership of all natural beauty. The mystery of the growing plant from a dry seed, put into warm moist soil, appeals. Little children like to collect.

In the first four grades physiology and hygiene is very much a personal matter. It is not practicable to give much formal instruction. Attention must necessarily be confined to safeguarding the health of the child while he is under the care of the school, and to the forming of certain health habits that are wise and proper. It is the duty of the school to protect the child's bodily welfare in every possible way. He should not be required to take instruction in a badly ventilated class-room. The temperature of the room, its facilities for lighting and seating, the presence of draughts, are matters of prime importance. An instructor is criminally negligent who permits unsanitary or unhygienic conditions to exist, if it lies in any way within his power to control them. Bright children are frequently seriously handicapped in their school work through disability in some physical sense. The eyesight may be poor. An eye test may be carried out in any school-room sufficiently accurately to indicate whether a child's eyes should receive the attention of a qualified oculist. Hearing may be dull, or the child may have a respiratory difficulty due to adenoids, or to diseased tonsils, or the teeth may be defective. The teacher should ever be on the alert to detect these physical defects, and to report them to the proper authorities for treatment. Among young children just beginning school, contagious and infectious diseases are very common. These may be mild in type, or they may be very severe. Every case should be considered a severe case, and rigid adherence to the health regulations of the Province or community should be observed. The teacher should be conversant with those symptoms which indicate that something is wrong, and should be ready and quick to act within the proper limits of authority. Much serious injury may result to a child seated at an ill-fitting desk. Special care should be taken by the teacher, particularly in the lower grades, to see that the child is properly seated. Posture habits are important. Innocent mannerisms in childhood may be the beginning of embarrassing habits in the adult which may seriously handicap him. Habits of personal cleanliness and neatness will require much attention in the case of junior pupils.

Method.

Free and informal discussion with the children on the various topics is suggested. The teacher should guide the discussion, encouraging the class to talk freely of their experiences and habits.

They should be encouraged to ask questions as well as to answer them. Suggestions should be given as to how to overcome bad habits, as well as how to establish proper ones. It should be borne in mind that repetition is most essential in the formation of habit; therefore, frequent reviews are necessary, and every effort possible should be made to see that the children are practising the principles taught. Health maxims learned by pupils will be found helpful, if not overdone. Many teachers have found it of assistance in this work to keep a scrap-book in which to place interesting clippings, illustrations from magazines and advertisements, etc. These help to make the work more interesting and practical.

The following signs are important as indicating disorders of health which may warrant investigation:—

- (a) Sore throat.
- (b) Ear-ache.
- (c) Running nose.
- (d) Sore eyes.
- (e) Dizziness or faintness.
- (f) Flushed face, without normal cause.
- (g) Unusual pallor.
- (h) Eruption of any kind.
- (i) Vomiting.
- (j) Frequent coughing.
- (k) Convulsions.
- (l) Swollen glands in the neck.
- (m) Puffiness of face or eyes.
- (n) Shortness of breath.
- (o) Acute pain.
- (p) Parasitic skin troubles.
- (q) Lassitude.
- (r) Headache.

The presence of any of the above signs may be an indication of a beginning contagious or infectious disease.

The outline below is not for rigid adherence. It is intended to be a guide from the wide range of which suitable material may be selected. The studies should be made from actual contact with the material used either in the school room or out of doors.

Autumn (September, October, November).

Preparations for Winter:—Must get warm clothing, must put away something to eat. The changes in the weather as the season progresses. The beautiful “out of doors” in which to play. The sky color, clouds, lights by day and night. Colors in the sky, at times, in evening. Big animals in the cloud formations, camels, bears, elephants, sheep.

The Landscape:—The green grass; the yellow grain; the trees; the lakes or sloughs or rivers; the flowers and their pretty colors; the birds that fly around; the animals, cattle, horses, sheep, dogs, fowl, gophers, foxes, coyotes; the butterflies, mosquitoes, flies, bugs; what these mean to us.

Garden Flowers:—Bouquets for school and for home; pretty wild flowers for mother and for teacher; flowers in flower pots for school and home; pretty flowers from scaly bulbs grown at school or at home.

Leaves:—Pretty colors and different shapes; collections of colored leaves to make a wreath or a dress for dolly; covering one another with autumn leaves; play in autumn leaves.

Shaggy plants bearing seeds:—Some seeds stick to clothes; some seeds fly away; plant some seeds in pots in school room to observe the mystery of growing plants.

Birds:—Their warm covering; their flying; their flocking; their twittering; some fly around trees; some swim; main activities of birds; their flying away for winter; some birds stay all winter; feeding the winter birds.

Animals:—Kitty at home and what she does; kitty's naughtiness in chasing birds; the dog as a playmate; interesting stories of our dog; other pets; the cow gives milk; the horse works hard; the sheep; the pig; different calls of these animals. Stories.

Weather:—The rising of the sun; the heat from the sun; the setting of the sun; changes in weather and the visits of Jack Frost and the first appearance of snow.

Winter (December, January, February).

Jack Frost has tightened up everything, soil hard, water frozen, sliding and skating; fluffy snowflakes; the beautiful "out-of-doors" after a snowstorm; the proper clothing for going out; sleighing and coasting; the hot fires at home from coal and wood; how Jack Frost stings little fingers, and toes, and noses; icicles; the appearance of the sky when it is snowing.

Winter activities of father and mother and older children; the vegetables stored for winter use; winter fruits (apples, oranges, nuts, etc.). Santa Claus and the evergreen trees.

Plants:—Geranium and other plants in school room; seeds of nasturtium, or bean, or wheat, grown in a vessel in class room; the flowers the florists grow for sale; grow bulbs; grow an onion, carrot, or turnip in water in class room.

Trees:—How bare they look; compare with Christmas tree.

Birds:—What birds are around; how they must feel; how they feed; winter feeding by children.

Animals:—Care of domestic animals, cows, horses, sheep, their feeding and protection. Care of pets in winter; animals that are roaming around wild, for example, moose, deer, coyote, fox; where are gophers, squirrels, bears? Fish that may be bought in the winter.

Weather calendar observations, discussions and records. Frost on the window panes, shapes of snowflakes; shortest day in year; long period of lamp light.

Stories read about winter conditions, involving children of other lands, animals, birds, etc.

Spring (March, April, May, June).

Spring activities, house-cleaning, removing double windows

and doors, digging garden or plowing fields, planting early seeds, lettuce, radish, sweet peas.

Some of these should be planted by the child at home or in school garden. The little baby animals—colts, calves, lambs, pigs, their characteristic play and their calls. The hatching of chickens at home.

Plants:—Pussy willows placed in water in class room. The two kinds, the woolly and the green. Early spring flowers, for example, pasque flower, violet, coltsfoot, buckbean. Bouquets for school and home. Effective arrangements. The sweet odors of spring in the woods and in the fields, the growing of grass and how the animals enjoy it.

The unfolding of buds from twigs placed in water in class room, balm of Gilead, poplar, Manitoba maple.

Animals:—The return of the birds, difference between birds in spring and fall, their chief occupation, their joy, their hard work, their enemies, their nests as they can be found, color of their eggs as they can be observed. The young birds, and how they quickly learn to take care of themselves. Care should be taken not to harm birds' homes, or eggs, or little ones.

The aquarium containing some plant life to keep water sweet, tadpoles, little fish, snails, caddis larvae; observations on life in the aquarium, and in the sloughs out of doors.

A jar containing wrigglers, to watch changing into mosquitoes.

The early piping of frogs in the spring, the sounds in spring, the changing color of the fields and woods.

Butterflies, first seen, what they were like, what they were doing, return of flies and mosquitoes.

The lengthening of day and shortening of night; disappearance of snow, where it goes. Muddy and rough roads, the increasing sunshine and warmth, and what this does. The season and seasonal changes. Where the sun rises, the movement of the sun, where the sun sets. East and West, North and South. Spring rains and snowfalls. Jack Frost, and his pranks in spring.

PHYSIOLOGY AND HYGIENE—Grades I, II, III and IV.

Physical Environment of Child in Schoolroom.

Seating, lighting, heating, ventilating without draughts, cleanliness of room, tidiness of room, attractiveness of room, supply of drinking-water, presence of children with contagious or infectious diseases.

Observation of child for evidences of eye-strain, ear-strain, mouth-breathing, defective teeth, finger-nail biting, harmful physical mannerisms, dangerous symptoms harmful or disagreeable to others, malnutrition, bad postural habits. Take every care to correct defects discovered.

Cleanliness.

Body, hands, face, neck, ears, teeth, nails, hair, head, feet, nose. Effect on health, effect on other people. The use of soap,

the tooth brush, the body bath. Clean clothing, clean home, clean food, clean bed, clean school, clean yard, and outbuildings.

Food.

Regular meals, thorough chewing of food. Eating slowly, eating plenty, drinking milk, avoiding tea and coffee, drinking plenty of water, avoiding too much sugar and candies. Manners while eating. Dangers in smoking and in taking strong drink.

Clothing.

Suitable for weather, care and cleanliness. Removing rubbers and overshoes, or scraping mud from boots before coming into room or home. Cleanliness of underclothing, use of handkerchief, necessity for keeping feet dry and warm.

Play, Sleep and Rest.

Importance of fresh air, breathing through nostrils. How to cure mouth-breathing, if a habit. Deep breathing. Importance of playing games, need for going to bed early and getting plenty of sleep.

Health Habits.

Avoid blowing another person's whistle, drinking from the common cup, wiping dry on the common public towel, picking a sore with fingers, or removing slivers with a common pin. Dangers in cuts, putting pencil into mouth, chewing someone else's gum, or taking a bite from a friend's apple or cake. Watch the six-year-old molar tooth for decay. Visit the dentist. The special value of brushing teeth with the rolling vertical method instead of the transverse; first to preserve them, and to avoid offence to other people.

Safety First.

Select a safe place in which to play. Be careful in crossing streets or railway crossings. "Stop, look, listen!" Danger from matches, fire-crackers, and fireworks. Danger from allowing rubbish to collect in heaps, the danger from hot ashes, the danger in lighting a fire with coal oil, the danger of girls' clothing catching fire around a bonfire. The death that may lurk in every hanging electric wire or bare switch.

Social Hygiene.

Keep good company; be fair in work and play; help others; be kind to animals; be polite to your teachers, and to those in authority; respect old age; be cheerful; read good books.

Minimum Requirements.

1. Informal discussions with class during lesson periods throughout the year.
2. Two field trips during the year, one in the fall and one in the spring.
3. The names and one interesting observation about each of ten natural objects, new to the child, and in its out-of-door environment.

4. Four short nature stories per month, read to the class by the teacher.

Supplementary Reading.

- Wm. Hamilton Gibson: *Sharp Eyes* (Harpers).
Margaret Warner Morley: *Seed Babies* (Ginn & Co.).
Allen Walton Gould: *Mother Nature's Children* (Ginn & Co.).
Georgina Craik: *Bow-wow and Mew-mew* (Chas. E. Merrill Co.).
Zoe Meyer: *The Outdoor Book* (Little, Brown & Co.).

GRADE II.

In Grade II the same general method should be pursued as in Grade I. The children are too young for any formal treatment. The end should be to give experiences, and to make impressions that may be of interest in themselves, and at the same time valuable for work in the higher grades. The play instinct is strong, and children are interested in activities. The child is still very much self-centred, which means that care must be taken on the part of the teacher to relate the subject in a personal way to the child. This can be done, as in the lower grade, very successfully by reference to the "let's pretend" life of the child. There will be much repetition of what was discussed in Grade I. This is not undesirable, inasmuch as it means the establishing of more intimate acquaintanceship. Much of the work will depend upon what is available, but more care should be taken to always keep well defined ends in view; namely, the familiarizing of the child with his surroundings, the acquisition of the observing habit, the establishing of the questioning attitude, and the development of tenderness and regard for created things. Stories will form a large part in this grade, as in the preceding grade.

For physiology and hygiene, see the outline under Grade I.

The outline below is not for rigid adherence. It is intended to be a guide, from the wide range of which suitable material may be selected. Of course the studies should be made from actual contact with the material used, either in the school-room or out of doors.

Autumn (September, October, November).

Review of experiences of children during holiday time, so far as these pertain to the "out-of-doors"—lakes, mountains, summer resorts, visits to the country. General observed characteristics of the season, with the main activities of father and mother because of the season. Shortening days, early frosts, becoming severer. Fall sports and games out-of-doors, and their relation to weather conditions. The changes that are taking place in the "out-of-doors" at this season, the coloring grain fields, the color of leaves and their falling, the animal winter-coats developing, the birds flocking.

Plant study:—Naming and giving distinguishing characteristics of at least five autumn blooming plants, e.g., golden rod, painted cup, sunflower, aster, fireweed, a general observation study only.

The change in trees as winter approaches:—Winter buds. Parts of a tree, root, trunk, or stem, branches, buds, leaves. Collection of ten different kinds of leaves, dried and pasted in a book.

Make a collection of seeds from five different kinds of plants, to be kept for future use in envelopes or in glass vials. Not less than fifty seeds of each variety should be selected.

Environmental:—Tidying of grounds and garden before winter comes. The direction of winds from day to day, as observed by smoke, by flag, by dust, by fluttering handkerchief, by moist hand, weather calendar, position of sun at nine o'clock, at noon, and at four o'clock. Its movement. The moon, new moon, full moon, old moon. Draw pictures and color. Stories of sun and moon.

Animals.

Birds:—Learn to know birds by color, by flight, or by notes. The main activities of the birds in the autumn, their food, their protection, their migration, the reason for their migrating. Stories of bird-life, particularly of birds the children may actually know. Have children tell stories, imagining themselves to be birds, telling about their difficulties, their joys, and other experiences. What a bird can see in its flight.

Other animals (Pets):—Give special attention to what the pets might think of their owners, from the standpoint of food, protection, and care. Humane stories involving pets, cats, dogs, pigeons, chickens, sheep.

Domestic animals:—The preparations they make for winter, heavy coats, fat; how they act in storms, necessity for food and water; liking for salt. The uses of domestic animals to men and children.

The observations of insect life that might be brought into the class-room, e.g., larva, cocoon, butterfly.

Winter (December, January, February).

General:—Seasonal characteristics and their result on the activities of man, of children. Devices for protection in winter, warm fires, warm clothing, double windows, smart action, winter games.

Plants:—Caring for potted plants and indoor window box. The slipping of the geranium and the growing of a new plant. How light affects a plant. Planting seeds collected in fall, and watching growth in tin cans. Radish, sunflower, pea or bean, pumpkin, make good seeds to grow.

Producing bloom from bulbs, hyacinth, daffodil, Chinese lily.

Winter fruits:—Oranges, lemons, bananas, winter grapes, nuts. Stories about the places from which these come.

Animals and Birds:—Winter birds and what they are doing. Winter care, the snow birds, and their activities. Care of the pigeons and fowl in the winter. Winter care of pets, the hunters in the winter after deer, moose, and fur animals. Stories of trapping. The humane treatment of animals, both when hunted and when domestic.

Fish in winter, and stories of winter fishing. Weather calendar, indicating direction of wind and very cold days. The bright stars at night, the Milky Way. Northern Lights. The compass, the cardinal points, and the location of pupils' homes, and other points of direction.

Spring (March, April, May, June).

General:—The seasonal changes, and how they affect men and children. How the thawing soil and melting snow affect the means of travel. The long drawn out period between the disappearance of snow and the growth of vegetation. Where the snow lingers the longest. The increasing length of the day from early spring until summer time. Farm and garden activities.

Plants:—Early spring flowers, such as coltsfoot, pasque flower, dandelion, violets. The places where these are first found. Where the grass is found to grow first. Twigs of trees and shrubs kept in water in class-room—willows, poplar, Manitoba maple—to observe expanding of buds. Changes in color in trees as spring advances. Visit to favorite tree or nature spot. Collection of flowers as spring advances for home and school decoration. Competitive naming of flowers.

Individual garden plots at home for lettuce or radish seed. The growing of a sweet pea or nasturtium seed at home. Descriptions of progress from time to time.

Animals and Birds:—The first bird to return, competition as to who shall see the first; difference between birds in spring and in fall, their activity, their song, their bright colors, their nest-building, their food-getting. Listing of birds as they appear, keeping dates, observation of nest of any bird, with stories of the progress in the hatching and development of young. Special precautions for protecting nests. Recognition and brief description of at least five birds. Stories.

The activities of domestic animals in spring. Observations of the young of these animals. Stories.

The opening of the sloughs and lakes, and the piping of the frogs. Eggs of frogs, or toads, or salamanders, in aquarium. Tadpole, and its activities in aquarium. Snails and water animals in aquarium. Their movements and general appearance.

The appearance of flies and mosquitoes. Where these breed, and how they may be controlled.

The development of the butterfly or moth from a living caterpillar.

The appearance and habits of the gopher, studied in a general way only.

Physiology and Hygiene as outlined under Grade I, page 34.

Minimum Requirements.

1. Regular discussions throughout the whole year.
2. Ability to recognize ten wild flowering plants, to tell color of flowers, where plants grow, and one interesting fact about each plant.
3. Ability to recognize five birds which may be found in the neighborhood, with three interesting bits of information about each.
4. Ability to give a simple description, involving three sentences, of some bit of nature, such as a tree, lakeshore, brook side, flowering group, in which the child may have a sense of personal ownership.
5. Knowledge of cardinal points.
6. One story a week, to be read to the class.

Supplementary Reading.

Wm. Hamilton Gibson: *Sharp Eyes* (Harpers).

Margaret Warner Morley: *Seed Babies* (Ginn & Co.).

Allen Walton Gould: *Mother Nature's Children* (Ginn & Co.).

Georgina Craik: *Bow-wow and Mew-mew* (Chas. E. Merrill Co.).

Zoe Meyer: *The Outdoor Book* (Little, Brown & Co.).

Jane Andrews: *Stories Mother Nature Told Her Children* (Ginn & Co.).

Payne: *Geographical Nature Studies* (Little, Brown & Co.).

Haaren: *First Notions of Geography* (D. C. Heath & Co.).

GRADE III.

In this grade the work will be a continuation of the observations and experiences, with the general nature happenings in the child's environment. If anything, action is of greater importance in this grade than in the preceding grades, but it will be the grosser or more aggressive activities that make the stronger appeal, like the strong wind, the pouring rain, the frightened animals, the fighting of animals. Because of the increasing maturity of the children in this grade, a little more definiteness should be expected in their observations and experience work. They should be expected to look for the less obvious characteristics of objects in the world about them. Plant study should be a little more exacting, and animal observations more specific. The beginnings in collection-making should be made at this stage. The young child loves to make a collection which may become his personal property. He will quite efficiently prepare and dry specimens of flowering plants, and mount them for his collection. The same will apply in the realm of insect life, curios, pretty pebbles, and such. The desire to excel in competition is strong and may be used to good advantage in making elementary science a game in which competitive attainment plays a large part, e.g., the largest list of birds, of flowers, of

leaves, of curios, of old birds' nests, of bees' nests, of insects. Imagination is particularly active at this stage, and care must be taken to see that real observations are distinguished from imaginary. Imagination may be used as a device to take the pupil afield into the world beyond his immediate environment to see the place from which the birds have come in spring, or to make trips to other lands to compare how children live and play. Interesting exercises can be devised in the use of the book-making idea. A special science book may be made, decorated, and filled with simple records, clippings, pictures, sketches, or mounted specimens.

The beginning in geography should be made in this grade, in the form of talks and discussions among the children on the natural forces operating around about them, the falling rain and snow, the winds and what they do, frost, running water, and so on. By this means bases are established from experience, with which to interpret geographical data in the subsequent grades. The forms of land and water may be observed in the vicinity of the home, or by making them on the school grounds, or by using the sand-box, supplementing observation in each case by plans and diagrams on the blackboard and on the flat surface of a piece of paper or page of a book. Mere memory recitals of set definitions is discouraged. Nearly all these forms may be associated with the hill and slope and running water. The simple beginnings in map-work should be made, restricting the effort to plans of the class-room and school grounds.

Attention is again called to the fact that the matter contained below is not intended for rigid adherence. Latitude must be taken by the teacher, who will of necessity be guided by what may be available in the community. Care should be taken to select what is practicable, and do as much work as possible direct from specimens. The spirit of the course should be carried out. The minimum requirements are compulsory.

Fall and Winter Work.

General topics:—Fall activities, with special attention to the part individual pupils play in these, picking berries, picking peas, picking up potatoes, gathering in the garden crops, and their storage for winter, the harvesting operations and the child's part in them, carrying water, running errands, driving the team. Bringing home the cattle, gathering eggs, and home chores. The part the stock plays in the life of the home, e.g., fowl, cattle, horses, pigs, sheep. The place the dog takes in the life of the home.

Storms of the season. The approach of frost, and the reasons why the frost is feared.

Plant Study:—Appearance and general distinguishing characteristics of ten plants, such as golden rod, dandelion, smooth blue aster, great willow herb, giant hyssop, bergamot, painted cup. Statements of where they are fond of growing and an examination of their roots, stems, leaves, flowers, and fruit. How

do they scatter their seeds? Be careful not to enter into too detailed a study. Every child should have a specimen of plant under study, and should make his observations direct from the specimen. Flowers and fruit will be obtained at different times, which will afford an opportunity for a review.

Six trees, or woody shrubs, should be recognized, and the children should be able to describe the distinguishing characteristics. The leaves should be recognized at sight. Uses of trees for shade, or screen, or windbreak, or beauty. Wood from forests, lumber.

Plant growing at school and home should be encouraged. Who can grow the best?

Winter bulbs make attractive work for winter study.

Collect seeds, five different varieties from those collected in previous grade, 50 seeds of each variety, observation of peculiarities of seeds.

Animal Life.

Birds:—Add five new birds for the recognition of the class. Their main activities; food and method of feeding; their uses to man; their disappearance. Bird stories and pictures.

Study of gopher, rabbit or squirrel:—More detailed study than in previous grade, kinds; how and when they live; what they do in the summer, and how they do it; eating, digging; carrying food; running; jumping; playing; homes; enemies; how they spend the winter. Stories of gophers, or rabbits, or squirrels.

Stories of bears, deers, coyotes, badgers; with pictures.

Muskrat:—Where found; appearance; home-building, and winter preparation; food; enemies; nature and use of fur; stories of trapping and hunting, e.g., by Indian, Eskimo.

Insects:—Grasshopper, how it feeds, on what it feeds, how it hops and walks; the birds that eat it. The harmfulness of grasshoppers. Collection of any five other insects. Care to take of them and how to mount them. The reason why we should know a great deal about insects. The danger in the fly.

Sky study:—Cloud, formation; moon; the earth a ball. It turns. Breeze, blizzard, snow, and shapes of snowflakes. Movement in water. The importance, colored ink or dye in a pail. How we keep warm. Methods of making fire, rubbing sticks; lightning, electric current, matches, burning coal, wood, gasoline.

Spring and Summer.

Bluebird, or junco, or meadow lark, or woodpecker, etc. Compare with other birds, sparrow, or robin. Distinguishing characteristics, habits, nest; where made; how made; how to encourage birds.

Ants and an ant hill. Stories of ants.

The uses to man of cow, of sheep, of horse, etc.

Frog:—When first heard; when first seen, color, where found; how they swim; how long they can remain under water; how

they hop; their food; how procured; why they are always found in or near water in spring; find some frogs' eggs, and get some tadpoles and keep in water; watch how they swim; find some tadpoles with legs appearing; what becomes of the tail?

Butterflies and moths; differences; recognition of two butterflies and two moths.

Spiders:—Where found; how many legs spiders have; observe a spider spinning its web; draw some web patterns. Place a pencil in a potato or apple, and set upright in a pan of water. On this island place a spider, and see how he manages to get away.

Some spring flowers—violet, false Solomon's seal, lungwort, buffalo bean, buttercup; recognition of any ten by flower and leaf.

List of flowers as discovered; the budding of trees; shades and color of vegetation and landscapes in spring.

Evergreen trees. Compare their appearance, shape of outline and color with those that are not evergreen.

Home garden plot; sow lettuce, radish, and spinach, and watch the plants grow.

Weeds in the garden. Name four and distinguish them. Why they are harmful.

A book of nature-notes, clippings, specimens, etc. This book should be a class-book, into which entries are made from time to time.

Geography.

I.—Seasonal Changes Affecting the Life of the Pupil.

- A.
 - 1. Games played in different seasons.
 - 2. Food eaten in different seasons.
 - 3. Clothing worn in different seasons.
 - 4. Protection sought in different seasons.
- B. Occupations of people during the different seasons.
 - 1. Inside by women and men.
 - 2. Outside by men and women.
- C.
 - 1. Mammals, domestic, wild, and the changes they undergo due to the change in seasons.
 - 2. Birds, varieties, migrations, which are dependent upon the seasons.
 - 3. Insects, beneficial and harmful, and how they work at certain seasons.

II.—Surface Features.

Study of actual forms in nature, or of made forms on school grounds, or on sand table.

Hill:—Elevation, climbing it; slope steep, gradual, running or sliding down; peak, valley, coulee. How hill affects traffic, gardening and farming, building. The beauty of the wooded hill, the view from a hill. The mountain.

Water on the hill:—Running water dependent upon elevation, rill, brook, river, current, banks, channel, washing and wearing

away of bed and bank; sailing toy boats, slough, lake, rowing, boating and fishing.

Elevations in water make island, peninsula, cape, gulf, bay, strait.

III.—Transportation and Travel.

How seasons change, surface features, and the effect these changes have on snowshoeing, canoe, dog, ship, ox-cart, horse and mule, camels, reindeer, elephants, railroad, automobile, aeroplane, what is carried?

IV.—Sky Study.

1. Weather, records, a thermometer and what it means, clouds, rain, and snow. Thunderstorms and hail.
2. Sun, moon, stars. Apparent motion of the sun and moon, North Star and Dipper.
3. Cardinal and semi-cardinal points, from sun in morning, afternoon and evening; from the North Star; from school and home.

Pictures, stories.

Physiology and Hygiene—See Course under Grade I, Page 34.

Minimum Requirements.

1. Regular class discussion throughout the year.
2. Knowledge of fifteen wild flowering plants learned from Grade I, and their distinguishing characteristics in stem, leaf, flower and fruit.
3. Recognition of ten birds learned from Grade I up, and one interesting fact about each.
4. Study of gopher or squirrel, or rabbit, giving knowledge of parts of body, habits of feeding, home, and protection.
5. Clear ideas of the main land and water forms.
6. General outline plan of school-room and school grounds.
7. Ability to locate the cardinal and semi-cardinal points in direction.
8. One story per week, either on a nature topic or on geography.

Supplementary Reading.

Olive Thorne Miller: *First Book of Birds* (Houghton Mifflin Co.).

Wm. Hamilton Gibson: *Sharp Eyes* (Harpers).

Chas. A. Keffer: *Nature Studies on the Farm* (American Book Co.).

Julia Augusta Schwartz: *Five Little Strangers* (American Book Co.).

Jane Andrews: *Seven Little Sisters* (Green & Co.).

Allen Walton Gould: *Mother Nature's Children* (Ginn & Co.).

Highroads of Geography, Introduction (Nelson).

Jane Andrews: *The Stories Mother Nature Told Her Children* (Green & Co.).

- Schwartz: *Grasshopper Green's Garden* (Little, Brown & Co.).
Jane Andrews: *Stories Mother Nature Told Her Children* (Ginn & Co.).
Haaren: *First Notions of Geography* (D. C. Heath & Co.).
Payne: *Geographical Nature Studies* (American Book Co.).
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GRADE IV.

In this grade the general environmental treatment of the subject of elementary science will be completed. There will be much repetition of subject matter considered in the previous grades. The study will be more definite, however, and special stress will be made on topics that have more appeal, but the chief end to keep in view is that of having the child at the end of this grade familiar with the broader aspects of his environment. His attention should be challenged when he sees the unusual in sky, or field, or river. He should know the normal characteristics of these. He should have a fairly good acquaintanceship with the birds, the wild animals, the domestic animals, a few flowering plants, and a few trees and shrubs that are found in his neighborhood. He should know something about the great world in insect life, and be able to distinguish certain insect forms he would meet in a ramble through the fields, such as ants, bees, flies, butterflies, moths, beetles, dragonflies.

In geography, attention will be largely confined to the community. The general topographical features of the countryside should be fairly well mastered, paying particular attention to the nature of the soil, and its effect upon the life of the community and the occupations of the people. The main roads and cross roads in the neighborhood, their conditions at different times in the year, where they lead, and such like should be studied. In rural districts the locations of the homes of the people in the community, and in the urban districts the locations of the main buildings and manufacturing plants, should be indicated. Charts and maps will be made, locating chief community features. The nationalities of people may be made the basis for taking the pupil afield to the homelands of these peoples, about which stories may be read or told. Various articles of food, cooking, and machinery may be made the basis for taking imaginary trips to the places from which these products are derived. The railway train of freight cars, or a passenger train, will form a splendid motive for taking the child afield from his home surroundings. The passing of an automobile with a strange license plate, a trip made by a member of the class or some great world event may form the starting point for taking the pupil in imagination into the world beyond his immediate surroundings.

For physiology and hygiene, see the outline for Grade I. There might be added a requirement of knowledge of the grosser aspects of the child's body, such as head, trunk, and limbs and their main subdivisions. He should know that the chief digestive

organ is his stomach, the chief circulatory organ is his heart, the chief breathing organ is his lung, the chief secreting organ his kidney, and the overlord of all, his brain. The general location of these organs in his body should be established. He should be familiar with his sense organs, as such, and school exercises should challenge, when practicable, all his senses—touch, taste, sight, smell and hearing.

Attention is again called to the fact that so far as the nature study phase of this course is concerned, the outline is merely suggestive. It is a guide. A resourceful teacher may secure material from the local environment which will serve the same purpose as that indicated herein, and be more appropriate. A teacher should always feel at liberty to make any substitution that will maintain the spirit of the course.

Nature Study.

General discussion and review of occupations of people of community, and how the changes in seasons affect these occupations. How seasonal changes affect the food problem, the clothing, the protection for man and animal, and the recreation of the people in the community. How roads are affected. How streams, plant life, and animal life are influenced by seasonal changes.

Review the surface features of surrounding country, paying particular attention to hills and slopes, and rain upon these. Experiments in evaporation of water in a shallow pan in the sun, in the shade, within the classroom, on the stove or radiator. Experiments and observations in condensation on outside of cold water pitcher, of steam pouring from spout of tea kettle, or from funnel of locomotive, or from factory whistle. Clouds, rain, dew, frost observations, with the end in view of establishing that there is moisture in the air, and that it gets there by evaporation, and is taken out by condensation.

Plants:—Local plants that are used for food, garden plants that are cultivated, vegetables and fruits, field plants grown for food; wild plants that contribute food, greens in the spring, berries; local plants from which clothing is made, e.g., flax; local trees used in making lumber, shades, windbreak, for beautification. Attractive wild plants for making bouquets; bad plants that act as weeds in field, garden or lawn; observational examination of the root, stem, leaf, flower, and fruit of ten plants during the year, with the view of being able to recognize the plant by the distinguishing characteristics of these parts.

Gather and keep, preferably in vials, 50 seeds from ten different varieties of plants. Sprout and grow some in tin cans in winter, or at other convenient time, in order to be able to recognize them as they begin to grow, and continue in their growth out of doors.

Supplement plant study with observations on potted plants at home, at school, and in garden, and with bulbs where possible.

Animals:—The animals useful to man, and how they are useful; seasonal changes in these animals in coats and habits; wild animals, and how they are related to man's needs; furs,

food, pests, and enemies; stories of the lives and habits of six of these animals; as much direct observational work as is possible. Stories.

The usefulness of wild birds to man, eating noxious weed seeds, destroying insect eggs and harmful insects, pleasant song and cheerfulness, food.

Recognition of ten birds found in neighborhood, with interesting first-hand information from experience or observation. What the birds eat; their good qualities to man; their bad qualities to man; where they nest; what the nests look like.

Birds that remain in summer-time only, that remain all year, that come only for the winter. Bird feeding and encouragement. Stories and pictures of birds.

Insects that are useful to man, bees, lady-bird, beetle. Insects that are harmful to man, e.g., potato beetles, leaf-eating larvae or caterpillars, cutworms, plant lice, flies, mosquitoes, grasshoppers. Try to observe the development of one insect from larva to adult state. Stories.

Fish:—How the fish breathes, experiment with some non-poisonous colored liquid, like raspberry juice or blueberry juice, let down into water in a straw in front of the mouth of a stationary fish in an aquarium. How the fish so easily propels itself through the water. How fish are caught. The kinds of fish caught near our home, and sold fresh in the stores. Observe shape, scales, fins, tail, mouth, eyes, nostril, gill slits of live fish in aquarium or pond. Stories.

Geography.

The people in the community, where they came from before living where they do now. Stories about their homeland far away. The favorable and unfavorable conditions which are found in the community which make it a suitable place in which to live. This study will involve climatic conditions, general surface conditions of hill or plain, sandy or heavy soil, high or low, fertility of soil, susceptibility to hail or early frost, nearness to railway or good roads, ease or difficulty in getting to base of supplies for groceries, clothing, machinery, fuel, water for home and stock, etc.

The big world beyond to which grain, stock, coal, lumber and other products are sent, and from which tea, coffee, sugar, and cottons are obtained. Means of communication with the world a way off. Stories of some far-away countries associated with some local interest or common article of home use.

In a general way only—tea from China, location of China on globe, people who live there, some of their customs of living, kinds of homes. How tea is grown, gathered, and prepared, how it comes to us.

In a similar way treat sugar from Cuba; raisins from Greece; silk from Japan; nuts from South America; olives from Italy; pineapples from Hawaii; grapes from Ontario; apples from British Columbia. Lead pupils to the homeland of citizens in the

neighborhood, locating the land both on the globe and on a flat map. Dwell upon some interesting general facts in connection with these lands and people.

Map-making of community, showing roads, chief buildings or residences. An understanding of scale, movement of sun, moon, North Star and Dipper, Milky Way, evening star. The roundness of the sky, of the sun, of the moon.

Physiology and Hygiene.

See details under Grade I, page 34.

In a general way review the great skeleton features of the human body—the head and skull-bones; the trunk backbone, ribs, shoulder bones, hip bones; the limbs, the upper arm or leg, the lower arm or leg, the wrists or ankles, the hand or foot-bones and the finger-bones or toe-bones.

The great smooth working systems in a healthy body and chief organs, stomach, heart, lungs, kidneys, brain; where these are located in the body, and the chief work they do.

The special senses of hearing, tasting, smelling, feeling, seeing. The organs necessary to these senses. Compare these senses in man with the same senses in animals.

Minimum Requirements.

1. Regular study of seasonal characteristics. Seasonal occupations of people in community; physical characteristics of neighborhood in land surface, water areas, or forest.
2. Ability to recognize at sight twenty-five herbaceous plants, wild or cultivated, and six trees or shrubs.
3. Ability to recognize at sight twelve wild birds, and give one interesting fact about each.
4. Ability to recognize six wild animals that live in Alberta, and give a distinguishing feature of each.
5. Ability to recognize a bumble bee, an ant, a dragonfly, a grasshopper, a beetle, a moth, a butterfly, and a spider, and know one interesting fact about each.
6. Know the main divisions in human body, the chief organs in the body, their locations, and their functions.
7. Make a map of town or countryside.
8. Read or hear read one story per week, on some phase of nature, or hygiene, or geography.

Supplementary Reading.

Mary and Elizabeth Kirby: *Aunt Martha's Corner Cupboard* (A. Flanagan Co.).

Olive Thorne Miller: *First Book of Birds* (Houghton, Mifflin Co.).

Wm. Hamilton Gibson: *Sharp Eyes* (Harpers).

Chas. A. Keffer: *Nature Studies on the Farm* (American Book Co.).

Julia Augusta Schwartz: *Five Little Strangers* (American Book Co.).

Jane Andrews: *Seven Little Sisters* (Ginn & Co.).

Julia Augusta Schwartz: *Wilderness Babies* (Little, Brown & Co.).

Florence Boss: *Stories of Pioneer Life* (D. C. Heath).

Maude Barrows Dutton: *In Field and Pasture* (American Book Co.).

Allen Walton Gould: *Mother Nature's Children* (Ginn & Co.).
Highroad of Geography, Book I (Nelson).

Comstock: *Handbook to Nature Study* (Comstock Publishing Co.).

Schwartz: *Grasshopper Green's Garden* (Little, Brown & Co.).

Thompson Seton: *Monarch, the Big Bear* (Scribners).

GRADE V.

In the preceding grades phenomena and experience were the main concern. The child in Grade V is beginning to show appreciation for the explanation of phenomena, and to search for the causes behind his experience. His reasoning is developing, as is his appreciation for relationship.

The social spirit is rapidly growing, and the tendency to form and to act in groups is becoming noticeable in the gang. Considerable initiative should be allowed. He is a natural trader and traveller, and he loves to barter. These characteristics of the child at this stage should be recognized, and utilized in organizing the elementary science in this grade.

From local experience and knowledge the pupil must be led into the great world beyond his immediate surroundings. The inter-relationships of plants and animals, and the relationship of these to man, are of interest to him. The earth globe and its general characteristics in land and water areas, in hot and cold belts, and the effect these have on the earth as the home of man, are matters of general knowledge he should have before he can even appreciate the geography of his home province. How other people live, what they do, and how this affects him are of great interest and importance to him in the relationships he must establish as a citizen of the world. More particularly, however, he will be called upon to obtain a fairly comprehensive knowledge of his own province. This study should result in pride in his home province, and an ability to demonstrate to others the advantages of his province, that make it a good place in which to make a home. Globe study is very essential. Following the location of the large land areas on the globe, will come the study of the flat map. Map symbols and methods of representation will be mastered in this grade, in which the child will be expected to master in quite minute detail the map of the province of Alberta. An outline map, on which to record progress in study, will be found of much value.

In physiology and hygiene it is desired to establish a solid foundation of fact about the human body, that in the subsequent grades the work in hygiene may be referred to that which is

already known. Particular attention is devoted to the great co-operating systems of which the body is composed, and in a general way only the laws of hygiene are made applicable. Definite data will be given bearing upon the evils of intemperance, involving the use of alcoholic beverages, tobacco, and other narcotics.

Nature Study.

Briefly review the general characteristics of environment studied in previous grades.

1. The topography of the country around, noting hill and hollow, streams and lake, lowland and upland, forest and field, roads, seasonal changes.
2. The wild plants in environment.
Typical specimens (1) of water plants, (2) of lowland plants, (3) of high dry land plants, (4) of shade-loving plants, (5) of grasses, (6) of trees and shrubs, (7) of mushrooms or fungi.
General characteristics of these plants to be deduced from the specimens studied and compared.
3. The cultivated plants of the district.
Five specimens each (1) of grains, (2) of vegetables, (3) of flowering plants, (4) of house plants.
Recognition and general care they receive.
4. The wild animals in environment.
Mammals—Varieties found, some facts and habits.
Birds—The common varieties found.
Reptiles—The snakes and their habits.
Amphibia—Frogs, toads, salamanders.
Insects—Flies, mosquitoes, grasshoppers, butterflies.
Spiders—Work of spiders, habits.

Relationship Study.

The following study in relationships must of necessity be of a general nature with the pupils in this grade. The types of animals and plants named are cited as examples of the relationship to establish rather than of forms to be studied. Care should be taken to observe this point, as otherwise the course becomes impossible. Just how the types mentioned do exhibit the relationship indicated is quite within the range of ability of the children in this grade, and should be very interesting to them.

Animal Relationships.

1. Relations of animals to vegetation.
 - (a) The plant-eating animals, domestic, deer, bison, wild sheep, goats, gopher, muskrat, beaver, mice.
 - (b) Insects—cutworms, weevil, onion maggot, cabbage root maggot, potato beetle, aphids. Habits.
 - (c) Birds—seed-eaters, and fruit-eaters, American robin, English sparrow, goldfinch, grosbeaks. Stories.

2. The relation of animals to other animals.

(a) Flesh-eating animals.

Wolf, coyote, fox, badger, weasel, mink. Stories.

(b) 1. Birds, eating flesh, fish, or other birds. Hawks, owls, crows, grackle, magpie, king-bird, pelican. Methods of getting food.

2. Bird-eating insects, insect eggs and larvae, fly catchers, phoebe, wood-pecker, warblers, chickadee, sparrow. Habits of working.

3. Birds eating water insects, minnows, tadpoles, and such forms, living in water, duck, geese, grebe, loon, tern, snipe, bittern, heron.

(c) Animals living part of their lives in water and part on land, eating insects and larvae, frogs, toads, salamanders. How they get their food.

(d) Reptiles eating insects, small animals, frogs, snakes, How they travel and their habits.

3. The relation of animals to man.

(a) The food of man.

1. Mammals—Beef, mutton, pork, venison, rabbit.

2. Birds—Domestic fowl, pigeons, wild game, birds, such as grouse, partridge, pheasant, ducks, geese, plover. Seasons.

3. Animal Products—Milk, butter, cheese, lard, eggs. Simple facts.

4. Fish—Whitefish, jackfish, trout, salmon, fresh, smoked, dried, salted, canned.

(b) The clothing of man.

1. Furbearers—Mink, skunk, beaver, muskrat, fox, wolf, bear. Stories of trapping.

2. Hides—Ox, horse, sheep, elk, calf, kid, pig. Use of leather.

3. Hair products—Hat fur, from rabbits, gophers; felt.

(c) Domestic Service.

1. Beasts of burden—Dog, horse, ox, camel, elephant, reindeer. Kindness and care. How they work for man.

2. Guardians or companions—Dog, cat, birds, wild animals, pets. The faithfulness of dogs.

(d) Pests and nuisances.

1. Mammals—Wolf, coyote, fox, gopher, mink, weasel, skunk, wolverine, mice, rats. Some of their methods of doing injury to man.

2. Birds—Goshawk, house sparrows, crows, cowbird, magpie. Their habits that make them nuisances to man.

3. Insects—Fly, mosquito, cutworm, potato-beetle, woodborers, clothes moths. How they are harmful to man.

(e) Wild friends to man.

1. Birds—Song birds, weed seed eaters, noxious insect destroyers. Song sparrow, vireo, robin, goldfinch, warblers, flycatchers, swallows.
2. Insects—Honey bee, lady-bird, beetles, ichneumon flies.
3. Snakes and frogs. How these animals are of service to man.

Plant Relationships.

1. To air—Plants take the poisonous breath of animals and fire and decay, and change it into life-giving oxygen. They raise themselves into air by stems, have many flat leaves to expose large surface. Green algae in stagnant water, exposed to direct sunlight, give off oxygen, which may be collected in tiny quantities.
2. To light—The need for light on part of green plants—a plank left on green grass for three weeks, potato-sprouts in dark cellar. How plants bend to light, the house geranium in window, the sunflower. How some plants protect themselves from strong light, the hairs on plants, the bloom on leaves.
3. To moisture—The necessity for moisture. How plants get moisture. Where the moisture goes. Why too much moisture is harmful.
4. To changes in temperature—The necessity for warmth in growing plants, tender plants, plants that stand much frost, those that will survive the severest winter. How plants prepare for winter.
The great plant factory, making countless tons of starch and sugar, in our back yards and gardens and fields.
Plant products valuable to man, tea, sugar, starch, cotton, flax, grains, vegetables.
Starch—Extract starch by the washing method from potato, from wheat or corn.
Sugar—Make a syrup or a sugar from a sugar beet.
Oil—Squeeze some oil from the kernel of a walnut or a pecan.
Fibre—Obtain threads from flax stems. If necessary, grow flax plants for this purpose.

Geography.

The great land and water areas making up the earth - ball definitely located on the globe, and named; also the great barriers to intercommunication: oceans, mountains, deserts, ice barriers. The zones, temperature, characteristics with typical plant and animal distribution. The great factors which make the earth a suitable home for man: moisture, temperature, fertile

soil. General map surface translated from spherical surface of globe to flat map. Study of maps of the continents, with interpretation of marks indicating map features; more particular reference made to the map of North America, more specific reference to places on the world area that have some significance to home life, locating them both on the globe and on the map.

Alberta.

The location of Alberta on globe, on continent, in Canada. The neighboring territory on all sides. The drainage systems as determined by the slopes.

1. Small portion of Southern Alberta draining by Milk River into Missouri River.
2. Saskatchewan drainage system. North and South branches.
3. Athabasca and Peace River as part of the great Mackenzie drainage system.

Automobile trips over province to discover—the extensiveness of the province, the nature of the surface, the soil, elevations, large water-courses and bodies, treed and treeless areas; the people, who they are, how they live, what they do in work and in play; the cities, towns and railroads.

1. From Medicine Hat to Coleman via Lethbridge.
2. From Lethbridge to Banff and Lake Louise.
3. From Calgary to Edmonton, with a side trip to Sylvan Lake and Gull Lake.
4. From Edmonton to Jasper, visiting a coal mine.
5. From Edmonton to Lloydminster via Vegreville.
6. From Edmonton to Athabasca, to Peace River and to Fort Vermilion, noting lumbering, fishing, trapping, and prospecting.

A Railroad Ride Over Alberta.

Be careful not to multiply names. Picture post-cards of places should be of assistance in creating interest.

1. On Canadian Pacific Railway lines.
 1. Via Medicine Hat, Calgary, Banff.
 2. Via Medicine Hat, Lethbridge, Crow's Nest Pass.
 3. Via Edmonton, Wetaskiwin, Camrose, Provost.
 4. Via Lethbridge, Calgary, Red Deer, Edmonton.
 5. Via Edmonton, Dunvegan, and British Columbia to Peace River.
2. In Canadian National lines.
 1. Via Lloydminster, Vegreville, Edmonton, Edson.
 2. Via Wainwright, Tofield, Edmonton.
 3. Via Calgary, Drumheller, Camrose, Edmonton.
3. The Alberta and Great Waterways Railway.
Edmonton, Lac La Biche, Fort McMurray.

The railroad in the vicinity of the school would be the logical starting point.

A Visit to Alberta Cities.

Their location, their populations, the chief reasons for being cities, main activities of people in cities, the public buildings.

The beautiful climate of Alberta, "Sunny Alberta," temperature and rainfall at different places.

The Land Survey in Alberta, Map of a Township.

All above study must be followed on the map, which is indispensable. Draw map of Alberta, locating chief rivers and elevations, chief towns, cities, main railroads, prairie areas, dry areas, irrigated areas, semi-wooded areas, timber areas, mixed farming areas, mining locations, oil and gas fields, tar sand expanses, fishing lakes, trapping fields, summer resorts.

Physiology and Hygiene.

Care should be taken not to go too deeply into these topics. A general study only is required.

Attention to physical environment and its effect on health; frequent inspections, personal cleanliness, ventilation and temperature of school-room, eye strain, seating of pupils at desks. posture, breathing, eating, physical exercises and games.

The skeleton as composed of a bony framework, the skull, the backbone, the ribs, the hip-bones, the leg and foot bones, the shoulder bones, the arm and hand bones.

What bones are composed of, namely: mineral matter, of which lime is the chief, the change of bone from gristle to hard bone as person grows older.

Joints—finger and wrist, elbow, shoulder, backbone, hip, knee, foot and toe. Cartilage between joints to serve as pad. Bone fractures, and what to do. Dislocations and sprains, and their treatment and care. The importance of good posture for a growing skeleton. The effect of tobacco upon the growing skeleton of child.

The muscle system as the laboring forces of the body—attached to the skeleton. The need of exercise to develop muscles.

The machinery for digesting food, and how it works. The mouth, teeth, tongue, gullet, stomach, intestines, saliva from salivary glands, gastric fluids from gastric glands, pancreatic fluid from the pancreas and bile from the liver. The different kinds of teeth, temporary and permanent. Importance of caring for the teeth. How to care for the teeth, the dangers of pus sacs forming as a result of decay of teeth, and the extremely harmful effect of these upon health. The values of wholesome food, milk, and pure water. Kinds of food, heat-producing and body-building.

Mastication, salivation, digestion, absorption, assimilation.

Necessity for giving the system rest. Value of regular habits, temperate eating, and the selection of proper foods for the needs of the body, according to the occupation of the person.

The harmful effects of alcohol upon the digestive system.

In rural districts the child should avail himself of the home butchering of animals to get the general location of these organs.

For the urban child the viscera of the bird are often available for examination. In the school-room, it would be good method to expose the viscera of a gopher or a rabbit.

Minimum Requirements.

1. Regular discussions throughout the year as indicated above.
2. A knowledge of the inter-relationships of the plant and animal kingdoms, and of their mutual relationships to man, with special reference to food, clothing, shelter, occupation, or recreation.
3. Knowledge that the earth is a ball, and of its grosser physical features, such as continents and oceans. The great controlling influences acting on the earth, as moisture, temperature, elevations, water expanses, soil fertility, and the relation of these to those food products, protection materials, and useful articles for man which are within common home experience.
4. Map study, with map drawing of the Province of Alberta. Globe study of the zones and the life therein, and of the great land and water areas of the earth.
5. Detailed study of the geography of Alberta as a desirable place in which to make a home.
6. Know that the body structure of man is made up of great co-operating systems. The skeleton, muscles, digestive system, respiratory system, circulatory system and nervous system. Special knowledge of the digestive system.
7. The effect that alcoholic beverages, tobacco, and strong narcotics have within the body on the process of digestion.

Supplementary Reading.

William J. Long: *Wood Folk at School*, in *The Wood Folk Series* (Ginn & Co.).

Olive Thorne Miller: *Second Book of Birds* (Houghton, Mifflin Co.).

Wm. Hamilton Gibson: *Sharp Eyes* (Harpers).

Julia Augusta Schwartz: *Wilderness Babies* (Little, Brown & Co.).

R. J. Finch: *Geography Stories* (Evans Bros., London).

W. B. Werthner: *How Man Makes Markets* (Macmillan & Co.)

Florence Boss: *Stories of Pioneer Life* (D. C. Heath & Co.).

Highroads of Geography, Book II (Thos. Nelson & Sons).

Ritchie: *Human Physiology* (World Book Co.).

Ritchie & Coldwell: *Primer of Hygiene* (World Book Co.).

Watson: *Alcohol: Its Action on the Human Organism* (Longmans, Green & Co.).

Watson: *The Story of the Human Body* (Thomas Nelson & Sons).

Conn and Holt: *Physiology and Health* (Silver, Burdett & Co.).

Comstock: *Handbook to Nature Study* (Comstock Publishing Co.).

- McCalla: *Wild Flowers of Western Canada* (Mussion Book Co.).
E. T. Seton: *Monarch the Big Bear* (Grosset & Dunlap).
E. T. Seton: *Wild Animals I Have Known* (Grosset & Dunlap).
Stack: *Wild Flowers Every Child Should Know* (Grosset & Dunlap).
Rogers: *Useful Plants Every Child Should Know* (Grosset & Dunlap).
Blanchan: *Birds Every Child Should Know* (Grosset & Dunlap).
Frank T. Bullen: *Creatures of the Sea* (Religious Tract Society).
Ingersoll: *The Life of Mammals* (Macmillan Co.).
Cornish: *New Canadian Geography* (J. M. Dent & Sons).
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GRADE VI.

In a general way the child in Grade VI is similar to the child in Grade V. He is more mature, and more capable of following a plan in detail, and of making better generalizations. The inclination to work in groups is marked, and may be utilized to good advantage through the organizations of groups to make project studies. The desire for personal ownership is strong. This may be catered to by permitting a wide range of choice in the making of collections, which may have special appeal. The exchange of specimens on the barter system may even be permitted. Concrete data may be obtained in this way that will be valuable in class room work. Special investigations may be carried out, and reports made. The relationship between structure and use in both the animal and plant kingdoms may be studied in fair detail, and adaptations in body structure to use noted. This makes very interesting material to children at this age, and helps them to appreciate the beautiful harmony that exists in the great natural world. Formal note-taking from the teacher is to be deprecated, while definite note-taking by the pupil is very much to be encouraged. In this grade the child is mature enough, and should have sufficient ability, to express himself in language that would read well in a written account. It is much more worth while for him to express his own ideas, even if a little faulty, than to copy the ideas of someone else. Great care should be taken not to make lessons mere exercises in composition. Sketches should be encouraged at all times. Often an important idea is more easily expressed as a drawing or a diagram. These remarks should not be interpreted to mean that no dictation shall ever be given. Dictated notes may be models to follow, and important diagrams may be copied, but this practice should be reduced to a necessary minimum.

In geography, globe study will be continued, with the end in view of establishing definite ideas of the motions of the earth and the relations of these motions to the earth as a place in which to live. The relation between the earth and the sun, the

moon and the stars will be established in this grade, and the child taken in imagination out into the space beyond the earth. Special study will be made of the continent of North America, with emphasis on Canada as our own country. In the study of the continent, care should be taken not to make it too formal, and yet there should be a definite mass of subject matter, of such a nature that when it is mastered by the pupil he will have a substantial body of data that will give him the ability to comprehend and interpret the great geographical controls operating in the areas studied. The relation of geographical data to man should be maintained all the time.

In physiology and hygiene in this grade, progressive study from the preceding grade will be made of the respiratory system and the circulatory system. Care should be taken not to demand too detailed memorization of all the parts of these systems, the functions of the parts in their co-ordinated relationships, or their exhaustive care; but a child should be expected to comprehend the general organization of the main organs, how they serve the body, and a few of the rules of hygiene. Attention will be called to the harmful effects of alcoholic beverages and narcotics to the systems studied.

Nature Study.

During the year, collect, mount, and name specimens in any ONE of the following groups, viz.: 25 specimens of flowering plants in bloom, *or* 25 insects, *or* 25 interesting natural objects, *or* 25 samples of wild plant seeds (100 seeds of each), *or* 10 named varieties of grains (100 seeds of each), *or* 35 leaves of different shapes, *or* 25 photographs of natural objects or landscapes, *or* 10 different varieties of vegetables (home-grown by pupil), *or* 10 old bird-nests of different birds, *or* 5 jars of canned wild fruit of different varieties (picked and canned by the pupil), *or* 5 skins of different wild animals (caught and prepared by the pupil). These may be kept at home and called for at a specified time for examination and credit, after which they may be taken away as the personal property of the pupil. Specimens may be brought to schoolroom at request of teacher at any time that they might be valuable for class discussion.

ONE of the following projects may be carried out in place of those indicated above, either by the whole class or by individuals making their choice.

A home plant-growing project, involving ten different plants in suitable vessels, *or* a bird observation record, involving some observation on thirty different birds made during the year, *or* a wild animal observation record, involving thirty different wild animals (including insects, but excluding birds), *or* a weather diary extending in detail over a period of three months, giving daily notations of the thermometer readings at a certain fixed time each day, the rainfall per day measured in inches, the direction and strength of the wind and the general weather condition, *or* make a map of a given expanse of country of easy access, and mark on it the location of outstanding natural objects, if

any, and note on it, with dates as observed, the names and locations of twenty plants found in bloom, and of twenty different forms of animal life.

If possible, care for and rear an animal pet, such as—cat, dog, guinea-pig, white mouse, rabbit, chicken, turkey, pigeon, duck, canary, goose, colt, calf, lamb, pig, or some wild animal or bird. Explain either orally or in writing how these were cared for, how they grew, and how they may have been trained.

Make a detailed study of any five plants in bloom that may be found sufficiently easily to provide a specimen for each pupil. This study will involve an examination of the root system, the stem and branches, the different types of leaves, the flower, the fruit and the seeds, and will require the use that each of these parts are to the living of the plant. Not more than two lessons should be devoted to the study of each plant.

Make a general study, using specimens, if possible, of modifications in the body forms of animals, suiting them to their peculiar habits or modes of living. Refer to at least three mammals, five birds, one fish and five insects. This study will refer to the body form, color, nature of body covering, modifications for use of special structures. Attention should be called to the fitness of the animal to live the peculiar life it has adopted and should involve reference to modes of travel, method of getting food and means of protection.

Soil.

How soil is made—its chief constituents, sand, clay, vegetable or animal matter; poor soils; the reasons for cultivating the soil; how plant roots make their way through the soil; what the plants get from the soil; the effect of rain upon the soil; the effect of decay of vegetable and animal matter in the soil; the common animals that burrow in the soil.

Air.

The great air ocean; the reality of air, as shown by measuring it in a bottle or other vessel; the weight of the air, as shown by the difference in the weight of an empty automobile tire and one filled with pressed air; the pressure of the air, as revealed by the air in motion in a wind-storm; the movements in the air, as revealed by the smoke curling above a burning match, or smoke from a chimney or a passing locomotive; the moisture in the air, as revealed by the disappearance of water from drying clothes on a line, or the evaporations from an open vessel, or the condensation on the outside of an ice-cold pitcher in a warm room; the life-giving oxygen in the air, and its uses; the plant-nourishing carbonic acid gas in the air, where it comes from and its uses. Wind.

Heat.

The great source of all heat: methods of producing heat from burning substances, from rubbing substances, from hammering substances, from living bodies. How heat affects bodies such as

the air, as is shown in heating with a match a bottle of air with the mouth of the bottle under water; such as liquids, as is shown in the common thermometer; and on solids, as is shown in the increase in size of a screw-top of a fruit sealer which is heated with hot water. What the absence of heat means, the effect of extreme cold on bodies, particularly liquids, such as water or milk. The importance of heat to plant and animal life. How plants protect themselves during the winter. How animals fit themselves to stand the winter. Some of the commoner changes man is forced to make, in order to live successfully in a climate that has extreme of heat and cold. Some of the uses heat is put to in the doing of man's work in the world.

Water.

The place water takes in the life of plants, animals, and man. The uses man makes of water, food, cleanliness, cooking, power from water direct and from steam, dissolving substances, transportation, pleasure, etc.; the importance of pure water; rain water compared with well or river water; rain, snow, sleet, white frost. Compare rainfall in different portions of the province, and in different locations in Canada.

Geography.

The earth as a ball floating in space, the two motions of the earth, and daily motion, and what it means to man, the yearly motion, and its significance to man. The moon and its motion around the earth and what man may commonly observe in this.

The earth as a globe, the continents of the earth and the location of North America in its proper relationship to the other continents and to the oceans. The map of North America examined as a large whole.

In a *general way only*, compare with other continents as to—

- (a) Size and population.
- (b) General shape; direction of main axis.
- (c) Coastal features, islands and indentations.
- (d) Main water courses and direction of flow; lake areas and size.
- (e) Latitude of large centres of population in the Northern hemisphere—Edmonton, Calgary, Vancouver, Winnipeg, Toronto, Ottawa, Montreal, Quebec, Halifax, New York, Chicago, St. Louis, San Francisco, New Orleans, London, Paris, Berlin, Rome, Constantinople, Petrograd, Pekin, Tokio. General ideas only from the globe.
- (f) The national subdivisions of North America. The shape of the continent, with explanation of the highlands at the south, and large lake and island areas at the north. The directions of the main and secondary axis.

Surface Features.

The Western Plateau, the Appalachian Plateau, the Laurentian Plateau, the Mississippi drainage system, the St. Lawrence drainage system, the Nelson drainage system, the Mackenzie

drainage system, and the Yukon River system. The significance of these systems to man's settlement and occupation of the country.

The climate variations found in North America, only a small portion of continent in hot or cold belts, the significance of this, the temperature characteristics of the larger areas in the continent. The chief factors which determine the general climate of a country; latitude, large areas of water, ocean currents, mountain ranges, prevailing winds, precipitation. Indicate how these operate, and affect the continent. The rainfall or precipitation at different areas on the continent, and the effect this has. Secure the actual rainfall records from different areas, and compare them.

The life on the continent. Plants that are characteristic of the different portions of the continent, and the significance of these to man. Animals that are characteristic of the different portions of the continent, including special reference to those that influence the life of man in a beneficial or in a harmful way.

How man is distributed over the continent, with the chief characteristics pertaining to his general habits of living, his main occupations, and the relative position he occupies in the scale of civilization. The peculiar opportunities or difficulties that characterize the continent in its being made the home of man.

Map of North America.

The Dominion of Canada.

Comparison with the United States, Great Britain, France, Germany, Russia, China, Japan, Argentina, Australia and New Zealand, as to area and population; its place in North America and in the British Empire.

The Natural Subdivisions.

The Western Cordillera—The East and West ranges; the intermediate central plateau; a great barrier; the drainage system, lakes, and rivers; coastal features; the minerals, forests, agriculture, fish.

The Canadian Shield (Archaean), oldest rock in the world. rich in minerals. Shape. The great barrier between East and West; the clay belt altitude, drainage, minerals, forests, furs.

The Appalachian Plateau—Amount in Canada, disappearance into sea, and effect on coastal features; drainage. St. John River system; fertile valleys, mineral, timber, agriculture, fish. The St. Lawrence Lowlands—location, the chain of rivers and Great Lakes, the nature of country drained by tributaries of St. Lawrence system, agriculture, lumber, minerals, industry.

The Great Central Plain of Canada.

- (a) The Saskatchewan-Nelson River basin, the prairies, limits and characteristics of soil and surface and rivers, irrigation, minerals, timber, fish, agriculture.
- (b) The Peace-Mackenzie River basin—the lakes, low-lying nature of country, minerals, fish, agriculture, furs.

Review.

The great drainage systems of Canada. The St. John; the St. Lawrence, the Nelson, Saskatchewan, the Peace-Mackenzie, the Yukon, the Fraser, the value of these to Canada.

The Political Subdivisions of Canada Related to Natural Subdivisions.

The Maritime Provinces—Prince Edward Island, Charlotte-town.

Nova Scotia, Halifax.

New Brunswick, Fredericton.

Old Canada—Upper: Ontario, Toronto.

Lower: Quebec, Quebec.

The Prairie Provinces—Manitoba, Winnipeg.

Saskatchewan, Regina.

Alberta, Edmonton.

The Pacific Province—British Columbia, Victoria.

The Yukon territory.

The districts of Mackenzie, Keewatin and Franklin.

Climate.

Compare the temperature variations, and the rainfall, with the prevailing winds in the different natural subdivisions.

The Natural Resources of Canada Which Make Her Potentially Great.

The coastal waters, harbor facilities, summer and winter, fisheries, minerals, forests, fertile lands, fur-bearing animals, water power, natural beauty.

The Industrial Activities of the People of Canada.

Agriculture, fishing, mining, lumbering, manufacturing. Distributing.

The Trade and Commerce of Canada.

The Trade Routes. The reasons for them.

The St. Lawrence River System—Summer and Winter ports. The Hudson Bay route, its potential significance. The Railway systems of Canada. How the barrier of the Canadian Shield is overcome. How the barrier of the Western Cordillera is overcome. Roads in Canada and the importance of good roads.

The opening of the Great New North.

The Pacific Ports. The importance of the Pacific Ocean to Canada because of the development in China, Japan and India. The significance of the Panama Canal. The imports of Canada. The exports of Canada. The people of Canada, and the future that lies before the country.

The Provinces of Canada:—A comparative study of the provinces under the following heads: Area, population, topographical features, drainage systems, climate, natural resources, main industries, amount of business done, chief centres of

population. People. Survey provinces of Canada, with view to making comparisons as to the contribution each may make toward developing Canada into a great country in the world.

Newfoundland should be studied in a comparative way, similar to a Province of Canada, and under the same general headings.

The United States and Alaska.

The magnitude of the United States. The reasons for the United States attaining to the position they hold.

The great natural resources of the country.

The climate which gives such a variety of product.

The great natural ports and highways, the St. Lawrence River system and the Mississippi River System.

Call attention to the fact that the type of settler that has been responsible for the development of the United States, comes chiefly from the North of Europe. Note that Canada is also largely settled with people who owe their origin to Northern Europe.

The Great Natural Subdivision.

1. The Atlantic and Gulf coastal plains. General surface features. The climate, natural products, the main industries, main centres of population.
2. The Appalachian Highlands. Surface, climate, natural products, characteristics, main industries, main centres of population.
3. The Great Central Plain. Surface, climate, natural products, main industries, chief centres of population, main trade routes.
4. The Western Cordillera. Surface, climate, natural products, main industries, chief centres of population.
5. Alaska—Value of the country to the United States. Main activities of the people.

Learn the states bordering on Canada.

Mexico—Location, size, surface, features, climate, products, nature of people, industries, cities.

Central America—The importance of the Panama Canal, products we obtain from Central America, and what we send there.

West Indies—The Bahamas, Cuba, Jamaica, Haiti, Porto Rico, the Lesser Antilles.

Reasons for a Canadian interesting himself in these countries.

Physiology and Hygiene.

Review the general structure of the body and the digestive system.

The Circulatory System.

The blood river and how the current is maintained. The heart as a pump, the arteries, capillaries, veins. The systematic distribution and collection, the lung distribution and collection.

The importance of having a good supply of blood.

The Normal Pulse.

The need of care in exertion, if a person suffers from a weak heart. Some of the symptoms, e.g., easily lose breath, thumping of the heart, discoloration of lips. The need of rest. How to tell when an artery is cut; when a vein is cut. What to do in each case. The need for care to prevent infection when a wound is made. Some simple devices to prevent infection. Cleanliness about the wound, bathing in alcohol, antiseptics. Germs, and what they do. The battle between the germs and white corpuscles.

What to do in case of nose-bleed.

The effect of cigarettes, tobacco, and alcohol on the heart and blood vessels of a growing child.

The Respiratory System.

The breathing of air. The nose and the sifting of the air and its warming. Larynx, voice, trachea, lungs and the purification of blood, bad air, necessity for good air.

The delicacy of the lungs.

How other animals breathe, such as spider, insect, fish, frog, dog.

The importance of pure air. Experiment with carbonic acid gas, to show how it will put out a burning candle. Where this poisonous gas sometimes accumulates. The precaution to take before going down a deep well or an old mine.

The objections to mouth-breathing.

Adenoids and tonsils, and their harmfulness.

Necessity for care when sneezing, coughing, expectorating.

The cautions to observe in connection with common colds. dangers from draughts, protection from sneezing, coughing and expectoration.

The need of extreme care in cases of tuberculosis.

Diphtheria, and its effects on the breathing organs. Anti-toxin. Serum to prevent diphtheria. The necessity for observing quarantine regulations. The benefits of taking deep breathing exercises.

The benefits of sleeping with plenty of fresh air coming in from windows and open doors.

The value of keeping air in a house free of dust and moist.

What to do in case of drowning, asphyxiation, or clothes catching fire.

How tobacco and alcohol affect the breathing organs of the young people who use them.

Minimum Requirements.

1. One collection indicated in the detailed outline above.
2. Detailed study of the root, stem, leaves, flower, and fruit of five plants, noting the characteristics of each of these parts and the specific use these parts are to plant.
3. The adaptations in the body forms of different kinds of animals to their respective habits and surroundings, three mammals, five birds, one fish, and five insects.

4. (a) Soil in relation to plants and animals.
 (b) Air in relation to plants, animals, and man.
 (c) Heat and its effects on matter, plants, animals, and man.
 (d) Water in relation to soil, plants, animals, and man.
5. The motions of the earth, and their effects in producing the seasons and day and night. The motions of the moon in relation to the earth.
6. Careful study of the continent of North America, including a general study of the countries therein. Map of North America.
7. Careful study of the Dominion of Canada, including a general study of the provinces of Canada. Map of Canada.
8. A general knowledge of the respiratory and circulatory systems of the body. The uses of the main organs in each, and of fundamental laws of health pertaining to these systems.

Supplementary Reading.

Olive Thorne Miller: *Second Book of Birds* (Houghton Mifflin Co.).

Margaret Warner Morley: *Flowers and Their Friends* (Ginn & Co.).

R. J. Finch: *Geography Stories* (Evans Bros., London).

W. B. Werthner: *How Man Makes Markets* (Macmillan).

Ritchie: *Human Physiology* (World Book Co.).

Watson: *Alcohol: Its Action on the Human Organism* (Longmans, Green & Co.).

Watson: *The Story of the Human Body* (Thomas Nelson & Sons).

Conn and Holt: *Physiology and Health* (Silver, Burdett & Co.).

Comstock: *Handbook to Nature Study* (Comstock Publishing Co.).

McCalla: *Wild Flowers of Western Canada* (Musson Book Co.).

E. T. Seton: *Wild Animals I Have Known* (Grosset and Dunlap).

E. T. Seton: *Wild Animals at Home* (Grosset and Dunlap).

F. M. and L. T. Duncan: *Some Curious Insects* (Oxford University Press).

F. M. and L. T. Duncan: *Spiders and Scorpions* (Oxford University Press).

F. M. and L. T. Duncan: *Insect Life in Pond and Stream* (Oxford University Press).

F. M. and L. T. Duncan: *Butterflies and Moths* (Oxford University Press).

F. M. and L. T. Duncan: *Beetles and Flies* (Oxford University Press).

F. M. and L. T. Duncan: *Bees, Ants and Wasps* (Oxford University Press).

F. M. and L. T. Duncan: *Plant Friends and Foes* (Oxford University Press).

F. M. and L. T. Duncan: *Some Curious Plants* (Oxford University Press).

F. M. and L. T. Duncan: *The Story of the Plants* (Oxford University Press).

F. M. and L. T. Duncan: *Plant Traps and Decoys* (Oxford University Press).

F. M. and L. T. Duncan: *Plants and Their Children* (Oxford University Press).

Cornish: *New Canadian Geography* (J. M. Dent & Sons).

GRADE VII.

In the preceding grades certain general principles will have been fairly well fixed. For example, the geography of the world is merely an extension of the geography of the locality, into which gather and from which radiate myriad lines of communication. Exactly the same forces act in distant areas on the earth as operate in the district in which the pupil lives. Light, heat, air, moisture, and soil may be considered common factors which determine the geography of a country. These are variable in different areas, and as a consequence a variety of conditions exist which determine the suitability of the areas as the home of man. Upon these conditions depend man's problems of food, clothing, shelter, and protection. These requirements may become very complex. They may vary from those of the simple Eskimo to those of the wealthy dweller in a modern city, surrounded by all the luxuries his imagination may conjure. The ingenuity of man in harnessing the forces of nature to make them do his work, and his consequent ability to overcome barriers that otherwise would confine him, makes the field of world geography of the greatest personal interest to him, because of the myriad points of contact established in every turn of his daily life. The newspaper, through the medium of the telegraph, is making distant portions of the globe and the happenings therein as familiar to him as were neighboring communities to his forefathers. The oceans that were once effective barriers are now the greatest boon to intercommunication. The shelves of the grocer or the cases of the dry goods merchant are stocked with wares gathered from all corners of the earth. An intelligent citizen simply *must* be familiar with the general principles of world geography. He should know the general location of the main countries of the world, and the outstanding centres of trade and commerce. The importance of these centres, and the reasons for their importance, is a matter of legitimate concern. The natural resources of a country, the people and their customs, the surplus products and the requirements of the people, the natural advantages in the country, in the form of climate, fertility of soil, proximity to raw materials and to markets, how wares reach us and what we send in return, are all matters of interest to us about a country and of potential importance. The

child in Grade VII is too young, and his time in the grade too brief, to make it possible to cover even in fair detail the whole field of world geography, but in a general way he may be made to delight in entering into the experiences of his fellow-beings in other lands, sharing in their successes, and bearing with them in their struggles.

In this grade a survey will be made of the whole field of world geography. This, of course, will be made through a general survey of the continents, paying more particular attention to the more important countries and places in these. The preliminary study of any new continent or country should be made from the globe. In this study the following general method is advised: Shape of continent, contour (including the important coastal indentations), latitude and longitude, ocean currents and their influence, surface features, plains, plateaus and mountain systems, drainage, location and volume of the great drainage systems, temperature belts, prevailing winds, rainfall, plant and animal products, other natural resources, trade routes, articles of commerce of concern to us, human life, and customs of the people. The maps of Europe and Asia, Africa and South America should be drawn showing the main coastal features, elevations, drainage systems, temperature belts, rainfall records, political divisions and centres of commerce, routes of commerce.

In physiology and hygiene a general review will be made of the great body systems. The digestive, respiratory, and circulatory systems will have been covered in a general way in the preceding grades. These should be briefly reviewed, in order to make the understanding of their main functions definitely known. In a general way the study of the body systems will be completed in this grade. The new material introduced will be the nervous and excretory systems. In the study of this subject it is expected that the teacher will ever keep in mind the evil effects of spirituous liquors and of tobacco, particularly upon the growing child.

Geography.

South America, latitude and longitude. The main Andean axis, the Brazilian Highlands and the Highlands of Guiana. Comparison with North America. The effect these have on coastal features, and on the great drainage areas. The three great river systems, Orinoco, Amazon, and Plata and Parana. General study of these basins. The climatic conditions with explanations, the prevailing wind belts and rainfall with reasons. The effect of the ocean currents, particularly in the south, the vegetation, and the wild animal life.

The political subdivisions and their relative importance. The chief products of export and the areas from which these are obtained, and the ports from which they are shipped. Special attention should be paid to Argentina, because of its similarity to the Western Canadian Rockies. The people.

Eurasia.

Latitude and longitude. The main axis running East and West, Pyrenees, Alps, Balkans, Caucasus, the plateau of Iran, the "Roof of the World" and the two radiating branches, one south and the other north, the Himalayas, and the Thian-Shan Mountains extending into the Behring Sea, the main lateral spurs, Scandinavian Plateau, Ural Mountains, Spain and Portugal, Corsica and Sardinia Spur, Italy, Balkan Peninsula, Arabia, India, Indo-China.

The great plains—The great lowland plain of Europe, the Siberian Steppes and Tundras, the Arabian Desert, the Desert of Gobi. The great river systems—the Rhine, Rhone, Danube, Volga in Europe. Euphrates, Indus, Ganges, Brahmaputra, Yang-tse-Kiang, Yellow River. The great inland reservoirs, North Sea, Baltic, White Sea, Mediterranean Sea, Black Sea, Caspian Sea, Lake Baikal. The significance of these. The value of the broken coast line in Europe.

The Climate of Eurasia—The great westerlies and their effect on the climate of the great central plain of Europe, the Mediterranean climate. The summer and winter conditions in the great central plateau of Asia and the effect of these on the rainfall, e.g., Arabia and Persia, India and Indo-China, Japan and China, Siberia. The explanation of the Arabian deserts and the Desert of Gobi. The natural resources of the continent, timber, fruits, grains, fish, minerals, manufacturing, routes of commerce, great ports, people—Teutonic, Latin, Slavonic, Turkish, Arab, Hindu, Chinese, Japanese.

Europe.

Norway and Sweden, Holland, Denmark, Belgium, France, Spain and Portugal, Italy, Russia, Germany, Switzerland, Greece. Central European States.

The countries of Europe under the following heads—situation, climate, natural resources, chief industries, shipping ports, products we receive from them, and products they receive from us. Types of people.

Asia.

The following countries of Asia: China, Japan, under same headings as in Europe.

The great values of the oceans to mankind. The special value of the Pacific ocean to Western Canadians.

Africa.

Latitude and longitude, surrounding waters. Surface—a great plateau fringed with highlands, Atlas, Kong, Abyssinian Highlands. The Central Highland which becomes the water-shed of the Nile and Congo Rivers. The other rivers are the Niger and Zambesi.

The coast of Africa is very regular, the influence of this.

Climate—Within tropics. The effect of the marginal highlands in North and South Africa. The Sahara and the Kalahari Deserts. The effect of the highlands in Central Africa giving abundant rainfall and making the Congo and Nile rivers. The animal and plant life of Africa. The people of Africa—the desert nomads and Egyptians, the negro and the white settlers.

The products of the Mediterranean States, of Egypt, of Equatorial Africa, of South Africa.

The Cape to Cairo Railway.

The Suez Canal.

Physiology and Hygiene.

Review in a general way the digestive, the circulatory, and the respiratory systems.

The Secretory System.

(a) The kidneys, location, the bladder. The effect that alcohol has on the kidneys.

(b) The skin—the structure of the skin, sweat glands, hair, nails, how the skin regulates bodily temperature, care of skin, hair, nails, baths, clothing.

The effect of alcohol on feeling of skin.

The Nervous System.

The brain—cerebrum cerebellum, medulla, the spinal cord.

The nerves—cranial nerves and spinal nerves, motor and sensory nerves, sympathetic nervous system.

The effect of tobacco on the nervous system of growing young people.

The effect of alcohol on the nervous system of young people.

The Special Senses.

Touch—How we feel.

Taste—A touch sensation in the tongue, taste buds.

Smell—The olfactory nerves.

Hearing—The structure of the ear and how we hear.

Sight—The structure of the eye and how we see. Special care of the eyes.

Minimum Requirements.

1. A knowledge of South America, involving the chief structural features of the continent, the great drainage systems, the climatic conditions in different parts, the natural resources of the continent, chief imports and exports, main political divisions, and large centres of population.
2. A similar knowledge of the geography of Europe, with a more particular study of France, Belgium, Holland, Denmark, Norway, Sweden, Germany, Russia, Italy, and Spain.
3. A similar knowledge of the geography of Asia, with a particular study of China and Japan.

4. A general study of the geography of Africa.
5. Map studies of South America, Eurasia, and Africa.
6. Definite knowledge of the nervous system and its main divisions, including the special senses, and of the excretory systems of the body, and the functions of its main organs.

Supplementary Reading.

Hunter and Whitman: *Civic Science in the Home* (American Book Co.).

Highroads of Geography, Book IV (Thos. Nelson & Sons).

Ritchie and Caldwell: *Primer of Hygiene* (World Book Co.).

Ritchie: *Human Physiology* (World Book Co.).

Watson: *Alcohol: Its Action on the Human Organism* (Longmans, Green & Co.).

Watson: *The Story of the Human Body* (Thomas Nelson & Sons).

Holt and Conn: *Physiology and Health* (Silver, Burdett & Co.).

Herbertson and Herbertson: *Man and His Work* (A. and C. Black).

Here and There in Africa, in *The Here and There Series* (Macmillan).

Here and There in Asia, in *The Here and There Series* (Macmillan).

Here and There in America, in *The Here and There Series* (Macmillan).

Chamberlain: *How We Are Sheltered* (Macmillan).

Chamberlain: *How We Are Fed* (Macmillan).

Chamberlain: *How We Are Clothed* (Macmillan).

Chamberlain: *How We Travel* (Macmillan).

Cornish: *New Canadian Geography* (J. M. Dent & Sons).

GRADE VIII.

In Grade VIII the special field for geographical study is the British Empire. In the previous grades, a survey has been made of the world and the continents. In this study a general survey will have been made of the great British Empire. The work in this grade is intended to link up the various parts of the great Empire into the component whole it has proven to be in time of crisis. This study will involve a careful survey of the motherland of Britain and Ireland with the view to determining the great underlying principles which have made her the mother of such a far-flung world empire. The strategic position of the islands, its natural resources, the climatic conditions of the land, its insular nature, and relatively large coastline and the genius and integrity of the people are matters of great interest in considering how the Empire grew to such proportions. A sympathetic attitude should be established on the part of every pupil for the motherland. The pupils should be taught not to judge a great people

by the characteristics of a few whom they meet, and who may be poor types. A sympathetic attitude should develop in the minds of the pupils, and they should be made to feel proud that they have intimate relationship with so great a people—so rich in literature, in art, in music, in adventure, in science, and in learning.

The names and locations of the various portions of the great Empire, far-flung throughout the world, should be known to all. The inter-relationships of these parts is of fundamental importance, if the integrity of the Empire is to be maintained. The peoples in the Empire should be known by their characteristics and national aspirations. Their habits of industry, their opportunities for development, their contributions to the good of the Empire, their ideals and hopes, are matters of family concern to all members of the greater unity. By this study an attitude of sympathy should grow, and a co-operation should be made effective, that should be mutually helpful in any world crisis that might involve any portion of the Empire.

In this grade the pupil should be expected to bring certain general principles in world geography to bear upon the study of the geography of any part of the great Empire that may be studied. The reasons for conditions as they may be discovered should receive much attention. The correlation of historical data with geographical phenomena will often be found to be of the greatest interest to the pupil. The globe location of all portions of the Empire should be determined in terms of latitude and longitude. How the different parts come to be a part of the Empire should be known. How each contributes to the maintenance of the whole, and what the motherland contributes to the welfare of each part, are matters of great interest. How British relationships have benefitted the land, and the possibilities in development and world influence of the portions of the Empire, are matters of concern to every subject of the Empire.

The range of the Empire is so great that it involves nearly every geographical phenomenon known in the world. This study will open good opportunities for studying and applying the great world principles governing climate and their effects. This will involve the prevailing air movements and their effects, the advantages of oceans, the formation of deserts, and the regions of excessive rainfall. Variations in the time in the various portions of the Empire should be explained. Tides and their phenomena will come in incidentally, and a general explanation should be in order. On the whole, the treatment should be such that when the pupil may at some time visit a distant land, he will have a basis of judging and understanding many things which otherwise would be merely empirical and superficial.

Previous to this grade the pupil has had an opportunity to get a fairly comprehensive knowledge of his body and of its great co-operating systems. The age at which this has been presented was such that it will not be fair to expect him to have a complete knowledge. By the time he attains the age of fourteen in Grade VIII, he should have the capacity to understand quite accurately,

and in fair detail, the data relative to his body. The first four months in this grade, then, should be devoted to a comprehensive review of the body and its co-ordinating systems. When these have been well learned, he is then ready to make applicational use of the principles of hygiene and sanitation. He should know the more obvious things to do in case of accidents, and as a citizen he should understand the significance of the laws of sanitation, to which he will be compelled to subscribe. Knowledge of his body, and its needs and dangers, should make him more intelligent in its care when it is in distress under disease or injury.

Geography—The Great British Empire.

The British Isles.

The importance of the British Isles in the world; their exact location in longitude and latitude; area compared with provinces of Canada; their important position in relation to the civilization areas of the world; the advantages of an insular position with an irregular coast line; defence, place for development, climate, seafaring traders over the cheapest of highways, the ocean. On the mainroad between Europe and America; great natural resources, coal, iron, fertile soil, fish.

The British Isles a portion of the continental structure, shallow seas, North Sea, Straits of Dover, English Channel, St. George's Channel, Irish Sea, their value to the Islands as highways of commerce, defence, fisheries, health resorts.

The great subdivisions in the British Isles, England, Wales, Scotland, Ireland. Population compared with Canada. Stories of the people and their national traditions. The North of England and the South of England. The Highlands and the Lowlands in Scotland. The North of Ireland and the South of Ireland. The Londoners.

The surface of England and Wales. Highlands of Devon and Cornwall. Cambrian Group, Pennine Chain, and the Cheviot Hills. The Lowlands.

The significance of rivers to English development. The canals of England:—1. The Manchester Ship Canal. 2. Trent and Mersey. 3. Liverpool and Bristol. The value of the canal in the development of English industry and trade and commerce.

Agriculture.

Stock, grain, fruit, vegetables, flowers, mixed farming.

The British-bred stock—

Sheep—Southdown, Cotswold, Cheviot, Leicester, Lincoln.

Cattle—Durham, Hereford, Jersey, Aberdeen.

Horses—Shires, Clydesdale, Suffolk, Hackneys.

Swine—Berkshire, Yorkshire, Hampshire.

Mining.

Iron, coal, tin. The great shipping ports.

Manufacturing.

Lancashire—cottons.
Yorkshire—woolens.
Birmingham—iron and steel.
Sheffield—cutlery and grindstones.
Staffordshire—potteries.

Great Industries.

Silk, glass, paper, chemicals, sugar, refining.

Trade and Commerce.

Chief seaports, London, Liverpool, Cardiff, Newcastle, Hull, Southampton, Sunderland, Swansea, Bristol.

Scotland and Ireland.

A similar study to England and Wales.

The Empire.

Great Britain. The Empire of India, Dominion of Canada, Commonwealth of Australia, Colonies, Protectorates, examples of each. Extent and population.

Great Trade Routes Connecting the Motherland with the Dominions.

British—Canadian.
British—All Red across Canada to East.
British—East via Mediterranean Sea and Suez Canal.
British—East via Cape of Good Hope.
British—East via Cape Horn.
British—East via Panama Canal.
Canada and West Indies.

What the maintenance of these great trade routes means to the Empire, great shipping, navy, coaling stations, dry docks, seamen.

The British Empire in America—North and South.

Canada, Newfoundland, Jamaica, Leeward Islands, Windward Islands, Barbados, Trinidad, Tobago, Bahamas, Bermudas, Honduras, British Guiana, Falkland Islands, South Georgia.

Careful review of Canada, with special emphasis upon the contribution that Canada has to make to the British Empire, and what Canada receives from the British Empire.

The trade that Canada carries on with the Motherland.

The other divisions shall be considered in the light of their interest and importance as members of the Empire related to Canada.

Location, size, population and kind of people. How it became a portion of the Empire, peculiar advantages it may possess in climate, special products, ports of call or supply, prospects for trade with Canada indicating what Canada might send and what she might receive.

The British Empire in Asia.

The Indian Empire—What the Indian Empire includes.

Location; extent; population; great provinces; people; religion and customs. How the people live, wealthy and poor. How the Empire came under British rule; the government of India, British Territory and Native States.

The surface features of the country, the climate, the monsoons, vegetation, products of the soil and how Indian industry is able to produce such quantities; the "paddy" fields; the mineral resources; educational facilities. The relation of India to the motherland and to other parts of the Empire.

Cyprus, Burma, Andaman Islands, Nicobar Islands, Laccadive Islands, Beluchistan, Aden, Perim, Bahrein, Ceylon, Maldiv Islands, Straits Settlements, the Malay States, British North Borneo, Brunei, Sarawak, Labuan, Hong Kong.

Location of these places, and the place they occupy, and the contributions they make to the Empire as a whole. One interesting fact at least.

The British Empire in Africa.

Give special attention to South Africa, under the following heads—location, area, population, people, surface features, climate, natural resources, industries, commerce. How it became a portion of the Empire. Importance to the Empire.

Location and general importance of the following—Gambia, Gold Coast Colony, Nigeria, British East Africa, Anglo-Egyptian Sudan, Somaliland, Zanzibar, Mauritius, Rodriguez, Seychelles, Ascension, St. Helena. At least one interesting fact about each.

The Empire in the South Seas.

Australia.

A careful study of Australia, with special reference to the important place it occupies in the Empire, particularly in reference to the motherland and to Canada.

A Similar Study of New Zealand.

The location and general importance of the following places:

Solomon Islands, Fanning Island, Fiji, Gilbert and Felice Groups, the New Hebrides, Papua, the Tonga (or Friendly) Islands. At least one interesting fact about each.

Tides and their characteristics. A general explanation of cause.

Time—Sun time, Standard time. "The sun never sets on the British Empire."

Physiology and Hygiene.

Review the structure of the body, skeleton, muscles, digestive system, circulatory system, respiratory system, nervous system and excretory system.

What to do under the following circumstances: (1) when a bone is broken; (2) when clothing is on fire, and a severe burn results; (3) when a person falls down in a fainting fit; (4) in case of apparent drowning; (5) when an artery is severed; (6) when a person is poisoned; (7) in case of severe frost bite; (8) when a body has received severe electric shock. Make practical demonstrations where possible.

Disease germs—very small. How they may be taken into the body.

Typhoid fever and precautions.

Tuberculosis and precautions.

Diphtheria, whooping cough, influenza and colds—precautions to take.

The house-fly and its relation to disease. Be satisfied with nothing short of its extermination.

Food—and its relation to health; care of foods.

Heat-producers, muscle-builders, bone-makers.

Vegetables, meats, milk, cheese, eggs, bread.

Water and its great importance to man. Care of water supply.

Cleanliness in person, in home, in garden, and backyard, in lane and vacant lot, in city and street and park.

Rest and Exercise—value of participation in games. Value of playgrounds. Swimming facilities.

Minimum Requirements.

1. Knowledge of the names and locations of the chief portions of the British Empire scattered over the globe.
2. Detailed study of the parent islands, involving their structure, their geographical significance in the world, reasons for the prominent position they occupy in the world, their natural advantages, their chief industries, exports and imports, trade routes, chief centres of population.
3. Careful study of India, South Africa, Australia, New Zealand, Canada, as parts of the Empire. This study will involve topography, drainage, rainfall, soil fertility, agricultural methods and products, natural resources, industries, exports and imports, lines of internal communication, centres of population, types of population, government.
4. General study only of the lesser important portions of the Empire. One important fact about each part shall be required.
5. Map study of British Isles, India, South Africa, New Zealand, Australia, Canada.
6. Knowledge of Sun time, Standard time.
7. Knowledge of the great systems in the human body and of the functions of the main portions of each system.
8. Knowledge and practice in the rendering of first aid to injured.
9. Familiarity with the fundamental laws of personal, home, and civic hygiene and sanitation.

Supplementary Reading.

Highroads of Geography, Book III (Thos. Nelson & Sons).

Ritchie and Caldwell: *Primer of Hygiene* (World Book Co.).

Ritchie: *Human Physiology* (World Book Co.).

Watson: *Alcohol: Its Action on the Human Organism* (Longmans, Green & Co.).

Watson: *The Story of the Human Body* (Thomas Nelson & Sons).

Herbertson and Herbertson: *Man and His Work* (A. and C. Black).

Here and There in the British Empire, in *The Here and There Series* (Macmillan).

Here and There in Scotland and Ireland, in *The Here and There Series* (Macmillan).

Here and There in Australasia, in *The Here and There Series* (Macmillan).

Chamberlain: *How We Are Sheltered* (Macmillan).

Chamberlain: *How We Are Fed* (Macmillan).

Chamberlain: *How We Are Clothed* (Macmillan).

Chamberlain: *How We Travel* (Macmillan).

Cornish: *New Canadian Geography* (J. M. Dent & Sons).

Industrial Arts

INTRODUCTORY.

HOW TO STUDY A PICTURE.

Children love pictures as they love stories; they love to look at them; to hear about them; to tell about them. Since love of pictures is a common trait of childhood, we should give them pictures—and good ones. From constant association with the works of the best artists, children secure distinct cultural training, which (properly directed and nourished) enriches the mind and deepens the emotions. The mere presence of a great work of art in a school room exerts a very real influence. We cannot live with a great picture, or a great personality, without being influenced for good.

From this it follows that great care and discrimination must be exercised in the choice of the pictures which are to be presented to children. First of all, pictures of animal-life and child-life can be used to best advantage; then pictures of home-life, and the relation of mother and child. Children in the intermediate grades like pictures with plenty of movement, such as "The Gleaners," by Millet. These will be followed by pictures of nature in action, as "The Mill," by Ruysdael; and, lastly, the contemplative pictures, as a landscape by Corot, or a Madonna by Raphael.

Children should have the modern masters first — pictures which speak in our language, and of our time. It is better to give the children illustrations from the "Uncle Remus Stories" than to give them the Parthenon Frieze; better to give them Jessie Wilcox Smith in "Mother's Day," or the "Two Seasons," than to give them Raphael.

The second important point is to lead the children to observe the picture itself; not to study the life of the artist, nor the philosophy of the picture nor its history, but to study the picture itself. Pupils must be led to look at the picture, and to come to their own conclusions as to what the picture contains.

After this will come something about the laws of composition. Being shown, in a simple way, something of how the artist obtained these effects adds greatly to the interest of the picture in the case of older children. Care must be taken that such instruction be neither too formal, too abstract, nor too advanced for the pupils. No child should be expected to like every picture

placed before him. If he develops a sincere regard for a few, the teacher should be well satisfied, and the school has fulfilled its part in setting his feet on the right path.

One of the methods commonly employed in studying a picture is the following: Three brief lessons may be given to each picture, dealing with distinct phases of the study—

- I. The picture, and its significance.—An attempt to link up the child's experience with the story which the artist has used the picture to tell.
- II. A description of the picture and its good qualities.—Here the child will be led to see for himself the message which the picture is trying to convey, and to express this in his own language. He must be led to interpret the story for himself, and care taken that nothing more is expected than the normal response of a child.
- III. The picture and poetry.—It should early become clear to children that there are many ways of telling a story. The artist does it in one way, and the poet in another. Where the same subject has been treated in both ways, the children should compare the two.

Two picture study lessons are outlined here. Where this is done, there is always danger that teachers may attempt to cast all lessons in this mould. To attempt to do this is to invite failure. There are as many ways of presenting a picture to a class as there are teachers, and every good teacher will soon discover the method best suited to his temperament.

I. "A Fascinating Tail" (Ronner)—Grade II.

(a) The picture and its significance.

In this introductory lesson, the teacher might talk about cats and kittens, their ways and playfulness, the children describing their own pets and the funny things they do. The teacher will then promise that at the next lesson he will show them a family of pussies which everyone will enjoy.

(b) The description of the picture.

"Here is a little family. How many members has it? Which is the mother-cat? Can you tell me what they are all looking at? Let us give them names, and then we can tell what they are doing, by name: This one we will call the Puss (or Mother). What shall we call this one? Spotty! Very well, and this? Yes, Tinker will be fine. You said they are all looking at the tail under the book. Why? Does your pussy at home like mice? Look at the two kittens again. Which one, Spotty or Tinker, would make the better mouser? Why do you think so? What sort of fellow is Tinker? Yes, I think he is sleepy-looking, too. He is going to let Spotty have all the fun while he looks on. Who else is looking on? Does the Puss look sleepy? What do you think she will do, if the mouse jumps out, and

Spotty and Tinker do not catch it? Yes, see how she crouches just ready to spring. But she will not take part if the kittens catch the mouse. Why not?" [If necessary, point out that she is teaching them to play, and in playing they learn to hunt food. In a similar way, question about the other details of interest in the picture, and encourage questions and free expression of opinion. Next, ask various children to come forward and tell the story of the picture.]

Children might now be allowed to dramatize this, a small child taking the part of the mouse, and three larger children those of the cat and kittens. Alternatively a dialogue centering around the story might be worked up.

(c) The picture and poetry.

What do pussies think about,
All the day and all the night?
Well, they dream sometimes, no doubt,
When the mice are out of sight.
What do pussies think about,
All the day and all the night?

Do they think of milk and mice,
Or of mischievous young rats,
That to worry would be nice
For the jaws of little cats?
Pussy, dear, take my advice!
Milk is sweeter far than mice.

II. "Shoeing the Bay Mare" (Landseer)—Grade VI.

The treatment of this picture might be similar to that previously outlined, but it was thought better to suggest an alternative plan, or one better suited to a senior grade.

In this lesson the aim will be to develop an appreciation of the supreme motive of the picture; of the lesson the artist has to teach. Opinions will naturally vary somewhat in this particular. Some will prefer to see in the kindly attitude and sympathy of the smith, his love for animals, and will regard kindness to animals as the supreme message of the picture. Others will prefer to associate it with Longfellow's picture of the blacksmith, taking the lines, "Thanks, thanks to thee, my worthy friend," etc., and in the light of this to make the value of work well and honestly done, with its accompanying influence on character, the main motive of the picture. Others, again, may be satisfied with the picture as an adequate representation of a busy moment in the life of a useful and indispensable citizen. All are satisfactory and allowable. The main thing is to see that the interpretation, whatever its nature, is one in which the children have had some share, not

something handed over to them by the teacher, and one consequently lacking in vitality and interest.

A suggested Plan for study is as follows:

1. Source of subject. The Story of the Mare Betty. (See Reader.)
2. Setting. A quaint country blacksmith shop. Compare with the smithy we know.
3. Arrangement. Study the way in which the various figures have been arranged in the picture; the somewhat circular arrangement of the figures. Note glimpse out of doors gives a touch of freedom to the cramped quarters of the smithy. Note how figures of donkey and dog balance figure of man.
4. Centre of interest. Note how all three animals turn in the direction of the smith, and direct attention to him. Question as to attitude of each. How are their characteristics brought out? Note how lighting emphasizes the centre of interest.
5. Light and Shade. Study manner in which light falls on different objects. Note how Betty's figure is brought up against the highest light. Point out that the light gives a feeling of freshness and cheery warmth, which adds much to the charm of the picture.
6. Texture. Note the skill the artist has used to bring out the quality of the leather in the apron, the details of the tool box, the curly hair of the smith, the sleek coat of the bloodhound, shaggy coat of the donkey, and glowing coat of the mare.
Note particularly the strong contrasts of texture, as well as of light and shade. Ask as to the value of contrast in life. Why do holidays follow hard work?
7. Supreme motive. Suggested above (see introduction). Do not dictate here. Encourage freedom of expression.
8. History. When painted. Where picture is to be seen today, etc.
9. The Artist. Interesting details of his life. (Edwin Landseer, of England, 1802-1873. A great animal painter, chiefly of dogs and deer.)

INDUSTRIAL ARTS.

General Introduction.

1. Aim.

The cultural and refining influence of art on the lives of pupils should ever be kept in mind in every exercise in this course, the purpose of which is:—

- (a) To give a type of art education suitable to the needs of the great majority of people, who will not follow the arts professionally.
- (b) To give a varied and comprehensive series of exercises, in order that a pupil may acquire a finer taste or art judgment, and thus a deeper capacity to appreciate the beautiful.
- (c) To have the training of this course result in improvement of all other manual work of the children.

2. Skill.

Development of technical skill is not the main consideration in the course. At the same time, by arousing interest and pleasure in the subject, it is expected that, with systematic and careful teaching, each pupil will make reasonable progress, equal on the average to that made in other subjects. It has been abundantly demonstrated that every normal child, if properly and regularly instructed, can learn to draw and design within the limits that are peculiar to his mental age.

3. Construction of Course.

The plan followed in constructing the course has been as follows:

1. To parallel the work of each adjacent two grades, e.g., I and II, III and IV, thus making simpler the organization of the school for art instruction. To some extent the work is paralleled throughout all the grades, especially I to VI. In doing this the problem of the rural school was kept in mind, in the hope that in the time allotted to this subject practically as adequate a training can be given as in the larger centres.
2. To make the course as definite and progressive as that of any other subject of the curriculum, to which end ten exercises are outlined for each grade, each to occupy about four weeks to complete.

4. A Definite Course.

While the course seems very definite, and perhaps almost too rigid, it must be understood that it is compiled for the guidance of teachers, who, in the main, are not specialists in this field, and who, in consequence, need very specific direction. Some digression, especially in method, is to be expected in the case of the trained teacher.

5. Special Day Problems.

Special day problems may be introduced occasionally, it being kept in mind that, while the play element will enter

largely here, there must still be definite art training in each problem, in keeping with the attainments of the particular grade. Other than this, it is misplaced effort.

6. Materials.

At the end of the course for each grade is given a list of materials necessary for the work. These are divided into two classes: (a) those materials that might be kept on hand by the school, and that may be used as tools in the exercises; (b) other materials (as paper, etc.) that will be used by the individual pupil, and may be his property at the completion of the exercises, if the teacher thinks best.

7. Summary.

A short summary of the work of each grade is also given at the end of the course, so that the content of the year's work may be surveyed. By comparing the topic arrangement of the succeeding grades, some idea of the progression of the course may be obtained.

8. Adequate Preparation.

Finally, it cannot be too strongly emphasized, that foresight, adequate preparation beforehand, is an indispensable requisite if success is to be attained. The teacher must think the problem through to the end, and be ready to deal adequately and promptly with each step as progress is made.

9. Reference Books.

Will be announced later.

10. Appreciation.

The list of pictures will be announced later. An effort is being made to secure the best colored prints obtainable in England.

11. Guide to Teachers with Reference to the Work to be Covered.

This course is planned on the understanding that 125 minutes per week will be available for Industrial Art work. The city teacher, in charge of one grade only, should have no serious difficulty in completing the exercises in the time assigned. The teacher who is in charge of two or three grades, will observe that the amount of work suggested in any problem may be modified and curtailed; and, further, that since the exercises in succeeding grades parallel each other closely, classes may be readily combined in this subject.

In Rural Schools.

In the rural school a different plan is suggested. Here half the course may be completed during one year, and the remaining half in the next year. For example, pupils in Grades III and IV might take the first five exercises in the Grade III course one year, and the last five exercises of Grade IV in the next

year, even though there has been an advance of one grade in the interim. By this method, the different type problems will have been covered, and the pupil will have a good foundation for subsequent work.

GRADE I.

EXERCISE I.

To model and draw various types of fruit shapes; as apple, orange, pear, lemon, pumpkin, etc.

Time.

Four weeks.

Materials.

Clay or plasticine, cream manilla drawing paper (not larger than 6 x 4½ inches), wax crayons.

Aim.

1. To have the pupil learn to draw the shapes of various fruit forms, and to express these shapes in two dimensions (no attempt at shading).
2. To help the pupil to acquire motor control by using crayons.
3. To have the pupil learn the names of certain colors: as red, orange, yellow, etc.

Minimum.

Each pupil should draw three shapes: the round, as in the apple or orange; the round with one projection, as the pear; the elliptical, as a lemon, which also has a projection at each end.

Suggestions.

At least three or four short lessons will be required in modelling and drawing each shape; perhaps one in modelling and three in drawing. The object should be held before the class, the method of mass drawing explained by the teacher, and as she illustrates the pupils draw.

NOTE.—The following paragraph should be read in connection with problems II and III—

The teacher should prepare before hand from a large sheet of cardboard a model room consisting of walls and floor, the walls to be not less than a foot wide and ten inches high. This may be opened out flat on the blackboard when dealing with the problem before the class.

EXERCISE II.

To make a mat or linoleum pattern that might be placed on floor or doll's room.

Time.

Three weeks.

Materials.

Materials with which to weave paper mats, and mounting paper to complete same, or paper on which to make an all-over pattern, using stick-prints, or cardboard models and crayons. Stick-printing outfits, wax crayons.

Aim.

1. To have the pupil learn how to make a simple basket weave.
2. To make an all-over pattern.

Minimum.

Two types of rugs should be taken up, preferably one in paper weaving, and the other an all-over design pattern. The weave at first should be simple basket weave; and, if there is time, other types may be made. In the all-over pattern at least three lessons will be required to get reasonable neatness and accuracy.

Suggestions.

This problem is to some extent a continuation of the preceding exercise. A 16-square fold of the paper would indicate the guide lines for the pattern.

EXERCISE III.

The making and decorating of the walls of a doll's room. Stick-printed or wax crayon borders.

Time.

Three weeks.

Materials.

The cardboard room, with walls and floor parts hinged together, tinted paper to paper the walls, and darker paper, which should match the color of the walls, for baseboard or trim. Paper to match that of walls on which to make stick-printed or crayon border. Stick-prints or half-inch squares cut from manilla tag or cardboard, and wax crayons.

Aim.

1. To teach the use of pleasing colors for the walls of a room.
2. To teach paper folding, which is the method recommended, that the pupil may get good spacing for border.
3. To teach the making of a border by means of definite units placed at regular intervals.

Minimum.

A lesson on selecting tinted paper of suitable color for the walls and trim; two lessons in paper-folding, learning left, right, front, back, 16-square fold, and folding for border, and at least

four lessons in making a good border. Select the best, trim and complete the border for the walls of the room, one lesson. In all, eight or nine lessons.

Suggestions.

Much drill will be required to space and make the border, if stick-printing outfits are used. The class should work in unison, all doing the same operation at the same time. The paper should be placed on an exercise book as a pad. To make a crayon border, cut half-inch squares from cardboard, have pupils put these in place, and trace around with pencil, filling in the square shape with crayon strokes all running in the same direction.

A Hallowe'en problem may be taken if time permits.

EXERCISE IV.

To make a landscape: (1) by paper-tearing; (2) with wax crayons. These may be adapted to a Christmas problem.

Time.

Four weeks.

Materials.

Thin paper, such as poster or enginex paper, paste. The colors of paper might be white for ground, dark blue for sky, and darker paper for trees. Wax crayons, and drawing paper not larger than $4\frac{1}{2} \times 6$ for crayon landscape.

Aim.

1. To teach the pupil how to make different elements in a landscape: as sky, ground, distant trees, or near trees.
2. To teach paper-tearing.
3. To teach the use of wax crayons in making a flat color.

Minimum.

One example of each type of landscape should be completed.

Suggestions.

Take up one element at a time, as the making of a tree or the ground, etc., then combine in a simple picture. In working with wax crayons, try to get an even tone of color. Always control the tearing by having the pupils keep the fingers close to the tear, and tear by very short pieces.

EXERCISE V.

To make a booklet. This is a correlation of Art with other Grade I subjects.

Time.

Five weeks.

Materials.

Drawing paper 6 x 9, cover paper of same size, wax crayons, pencils, scissors, cord with which to sew booklet and to tie at the back.

Aim.

1. To teach the making of a booklet.
2. To teach cut-paper letters for title, or simple line capital letters in crayon.
3. To teach simple printing of the names of objects drawn in booklets, this to include both capital and small letters.

Minimum.

To complete a booklet of at least three sheets of 6 x 9 paper folded once. Make cover and complete booklet with work on each page. Wax crayons may be used for illustration; lead pencil for printing.

Suggestions.

Suggested subjects—a phonic booklet, a nursery rhyme booklet, or one connected with the child's other school work.

EXERCISE VI.

To make simple pieces of furniture, based on paper-folding, for a doll's room. The best ones may be selected for the room made by the teacher.

Time.

Four weeks—one piece per week.

Materials.

Paper 6 x 6, such as poster paper, or enginex paper, of suitable color, scissors and paste, 9 x 9 paper for table.

Aim.

1. To review paper-folding, to teach where to cut and fold, to make simple articles of furniture (as table, chair, bed, dresser for bedroom, or table, chair, shelf, stove for kitchen).
2. To call attention to the idea that the colors of furniture should harmonize with the walls, to some extent at least.
3. To teach children to paste, and to decorate the furniture in a simple way.

Minimum.

Four pieces should be made and some decorated. Thus a chair may have a piece of other colored paper pasted on the seat, or on the back, to suggest a cushion. Each pupil should make the four pieces.

Suggestions.

Teach step by step. Make beforehand so as to learn difficulties. It will likely require two lessons to complete each piece.

Pupils make mistakes, and only by seeing the mistake, as a rule, do they learn to remember what to do. It is obvious that making a table will require a larger piece of paper than making a chair.

EXERCISE VII.

To model and draw simple animal and bird shapes. The drawing should be carried on in a manner similar to that in Exercise I.

Time.

Four weeks.

Materials.

Plasticine or clay, drawing paper $4\frac{1}{2} \times 6$, wax crayons. Try to secure a picture if the actual object cannot be had.

Aim.

1. To teach the general shape of an animal and a bird placed in a simple position.
2. To review Exercise I, that is, to practise mass drawing rather than general outline work.
3. To teach simple round modelling or an animal or bird shape.

Minimum.

Three shapes should be modelled and drawn, as the cat, the rabbit, and the bird. If time permits, a further exercise might be interesting, viz., to make a stencil by cutting out one of these forms and tracing around so as to make a border. The shapes may then be filled in with wax crayons.

Suggestion.

Review the mass drawing of round shapes as in making an orange. In a similar manner teach the drawing of the bird or animal shapes. Draw same on blackboard while children are drawing at their seats.

EXERCISE VIII.

To illustrate simple rhymes as "Jack, be Nimble," "Little Miss Muffet," etc., using stick-laying, and line-action figures.

Time.

Four weeks.

Materials.

Small sticks about the size of matches, so that they may be easily broken into required lengths. Drawing paper $4\frac{1}{2} \times 6$, wax crayons.

Aim.

1. To teach approximately the proportionate lengths of the parts of the body.

2. To imagine the action or to see it through dramatization, and to represent same by stick-laying, and line-drawing, using crayons or pencil.

Minimum.

To teach the drawing of such actions as walking, running, jumping, and any other simple actions necessary to illustrate the story. To illustrate two simple stories.

Suggestions.

Perhaps the best method to teach proportionate lengths is by the use of sticks, and the use of a boy as a model. When an action is completed, it may then be drawn with pencil. Later it might be well to try representing action with the pencil or crayon direct.

EXERCISE IX.

Curtain and table-cover problems.

Time.

Three weeks.

Materials.

Paper of sufficient length for curtains and table cover, and of suitable widths. Stick-printing outfits, or cut-paper stencils as in Exercise II.

Aim.

1. To review previous processes and to make a border of a slightly more difficult type.
2. To have children space off with a ruler, rather than by folding the paper. (The width of the ruler may be taken if inches are not understood.)
3. To make a border of two units in pairs, and to compare with simple 2-4 time in music.

Minimum.

At least two pieces made by each, that is, the curtains (perhaps three pieces), and a table runner. In the former the curtain may be cut from a square piece of paper if a border is placed all around it. On the latter make decoration at the ends only. This will require more careful spacing than in Exercise III.

Suggestions.

The spacing here is the difficult problem. Begin at the corners and continue along side and end. In the runner begin in the middle of the end and work both ways.

EXERCISE X.

The drawing and cutting of simple flower and leaf forms.

Time.

Four weeks.

Materials.

Paper 4½ x 6, tinted paper as enginex paper, drawing paper, wax crayons, scissors and paste.

Aim.

1. To review the names of the six standard colors.
2. To teach drawing of flower shapes and leaf shapes that are not too difficult.
3. To cut out shapes by freehand cutting, and to arrange same suitably and paste down.

Minimum.

Two flowers should be drawn, and colored with wax crayons and one type cut out of paper and mounted.

Suggestions.

Here for the first time more irregular shapes are attempted and under the guidance of the teacher are drawn. The drawing should be carried on step by step. It may require some practice to conquer certain shapes. Use such flowers as tulip, lady slipper (side view), marsh marigold, daffodil. If cutting is too difficult, paper-tearing may be substituted to make flower shape, but better results here will be attained by cutting if successful.

SUMMARY.

The pupil who has covered carefully the above course should have had practice in the following:—

Representation.

Modelling and drawing round objects or elliptical objects as fruits, animals or birds based on these forms. Learning to draw simple flower forms.

Illustration Drawing.

Imagining simple stories and expressing the idea by means of line-action figures, with some degree of correctness as to relative proportion of the various parts.

Color.

Recognition and naming of the six standard colors.

Lettering.

Cutting a simple type of capital letter. Printing with fair legibility in line the capital and small letters of the alphabet.

Design and Composition.

Planning a simple border and working to the music of the border. Planning simple all-over patterns. Composition—using paper elements of a landscape representing sky, ground, and large tree, and arranging same.

Industrial Processes.

Learning to use pencil, crayon, scissors, and to control paper-tearing; weaving a simple basket weave.

Construction.

Learning to make simple articles connected with the doll's room as furniture and furnishings, curtains and table runners, mats, etc. Making a simple booklet, including paper cover.

Appreciation.

Choosing the best piece of work after a simple discussion at the close of a class exercise. As art is a matter of making fine choices, ability to choose wisely should be developed.

Picture Study.

One lesson a month is suggested, in which the pupils tell all they see and make comments on the story of the picture.

N.B.—In the picture study list for all grades the first five or six pictures are required. Copies of the pictures and study leaflets to accompany each of these may be had from the Libraries Branch, Department of Education, Edmonton. Where time permits, those in the supplementary list may be studied. Every picture mentioned may be had in the two cent size ($4\frac{1}{4} \times 5\frac{1}{4}$) from the Perry Picture Company. They are carried in stock at all times at the Libraries Branch, Department of Education.

1. "The First Step" (Millet) 525.
2. "Feeding the Hens" (Millet) 520.
3. "St. John and the Lamb" (Murillo) 685D.
4. "Can't You Talk" (Holmes) 1063.
5. "Squirrels" (Piper & N.) 903.

Supplementary.

6. "Family Cares" (Barnes) 1061.
7. "The Cat Family" (Adan) 500.
8. "Spring" (Knaus) 820C.

Summary of Materials for Year's Work.

Clay or plasticine.

Cream manilla drawing paper 6 x 9 or half this size.

Enginex paper or poster paper 6 x 6, 6 x 9, 9 x 9. Suitable colors.

Scissors—short scissors, 4 inches long.

Wax crayons.

Stick-printing sets.

Paste.

GRADE II.

Introduction.

This is a continuation of Grade I, but with these differences. The child should be taught—

1. To observe more closely objects that are to be drawn, that at least the characteristic markings will be noticed and drawn.
2. To use a rule and to be able to measure to inches and half inches, and to plan simple construction problems in which it is necessary to use these measurements.
3. To be able to handle various tools, as scissors, stick-printing sets, and crayons with more confidence than in Grade I.
4. To give better expression, whether with crayons or stick-printing sets, than in Grade I.

EXERCISE I.

To model and draw various vegetables, as beet, onion, carrot, potato, etc.

Time.

Four weeks.

Materials.

Clay or plasticine, cream manilla drawing paper, size $4\frac{1}{2} \times 6$ inches, wax crayons.

Aim.

1. To teach the modelling and drawing of certain type shapes of vegetables.
2. To encourage observation of certain characteristic markings peculiar to certain vegetables.
3. To review the names of six primary colors.

Minimum.

Three types should be taken up: the round, as beet or onion; the tapering, as carrot; and the irregular, as the potato. Each of these has characteristic markings which should be carefully noticed by the pupils.

Suggestions.

It might be well first to review the drawing of fruits; as, apple or orange. Follow this by drawing a beet, which has a tapering root at one end and roughened rings where the top grew. The outline method of drawing might be introduced here.

NOTE.—The following paragraph should be read in connection with problems II and III:—

“The teacher should prepare beforehand from a large sheet of cardboard a model room consisting of walls and floor, the walls to be not less than a foot wide and ten inches high. This may be opened out flat on the black-board when dealing with the problem before the class.” A different room from that made in Grade I, e.g., a living room, is suggested.

EXERCISE II.

The making of an all-over pattern suitable for rug of doll's room. Discuss color scheme. Have colors very closely related. Use stick-prints or cut-paper stencil.

Time.

Three weeks.

Materials.

Paper to harmonize with color scheme, preferably tinted construction paper for last attempt, stick-prints, or scissors and wax crayons. Paper about 6 x 6.

Aim.

1. To teach the making of a simple all-over pattern, using two sticks that harmonize in shape.
2. To discuss simple harmony of colors and colors closely related to each other, as light green and darker green.
3. To cut a simple symmetrical stencil, each pupil cutting his own and applying same to all-over pattern, coloring same with wax crayons.

Minimum.

At least one good all-over pattern from each pupil (this should have three to four lessons); and the making of simple stencil, tracing on pattern, and filling in with crayon, making the strokes all the same way.

Suggestions.

In stick-printing, first lay out guide lines about an inch apart each way. Use same sticks as for border; place paper on an exercise book as pad and practise to get exactness. In cut-paper stencil, try same motif as in border, perhaps changed to become a unit having no upper or lower parts. The teacher could cut a large one and show pattern by using chalk eraser to indicate design. Pupils should try to make one somewhat similar. At the same time welcome individual efforts.

EXERCISE III.

The consideration of suitable colors for walls and border. All pupils make a border of the same type. Best four or five are selected for decorating room.

Time.

Three weeks.

Materials.

Three pieces of cardboard for walls and another for floor, or make from one large sheet. Tinted paper for the walls, and darker in good color harmony for the woodwork trim and floor. Strips of paper for the border, and stick-printing sets or crayons.

Aim.

1. To discuss the use of suitable coloring for walls of living room.

2. To teach spacing and making of a crayon or stick-printed border, using two sticks. To have children determine what two sticks would go together and look well in a border.

Minimum.

To teach the inch as unit of measurement. To make a printed border using two blocks. To make as an exercise a cut-paper border of units one inch apart; to select the best of the same type to trim and put in place about the room.

Suggestions.

Much drill will be required in making the border. Problems of this sort, which improve by practice, should be done several times until limit of improvement is reached. More freedom may be allowed pupils in making the border than in Grade I. In making cut-paper border the teacher suggests, as tent and tree shapes (symmetrical), etc.

EXERCISE IV.

To make a landscape design in crayon and in cut-paper. These may be used for calendar or other Christmas problem.

Time.

Four weeks.

Materials.

Tinted paper, preferably in values of same color, cream manilla drawing paper, wax crayons, scissors, paste. Size of paper or finished work not larger than $4\frac{1}{2} \times 6$ inches.

Aim.

1. To provide exercises in spacing by making two landscapes, (1) a fairy landscape in cut-paper, and (2) a naturalistic one in crayon.
2. To develop the imagination by visualizing a fairy scene as in Grimm's "Fairy Tales," "The Sugar-plum Tree," "Wishing Wishes" and the planning in cut-paper of same.
3. To teach the six hues, and the light and dark tones of each of these, in all three tones—light, normal, and dark of each hue.

Minimum.

Two types of landscapes finished, a fairy one in cut-paper, and a naturalistic one in crayon. Teaching more accuracy in making a sky or simple sunset, ground, trees and hill. If latter is used for calendar, its size when trimmed should not be larger than 4×5 . Two weeks on each should be sufficient.

Suggestions.

In either process take up one element at a time as making a crayon tree or a cut-paper one. The pupils will follow the work

of the teacher. The fairy landscape may have entirely symmetrical shapes. Allow the imagination of the pupils to have exercise; give suggestions, but encourage original work.

EXERCISE V.

To make a booklet, a correlation with other Grade II work. Size 6 x 9.

Time.

Five weeks.

Materials.

9 x 12 drawing paper (cream manilla) for leaves in book, construction paper, tinted for cover, scissors, pencils, wax crayons, cord to sew and tie at back, paste.

Aim.

1. To improve the work of making cut-paper letters from key forms.
2. To make and sew a simple booklet.
3. To teach line capital and small type of letters, and to use these in all printing inside the book.

Minimum.

To make such booklets as "A Toy Booklet," or "Santa Claus Land," using four sheets folded. Cut-paper letters from inch square paper for cover. To make crayon drawing one on each page of simple toys (first practising same on other paper), as bugle, drum, sled, top, etc. Printing under the drawing a very short description of each article, using largely the small type of letters. Draw at least three toys. The drum should not show ellipse at top; draw side view only.

Suggestions.

As in Grade I, the best method so far in making cut-paper letters is by making a key form first, and cutting letters after a number of these have been made. With an inch square of engine paper, fold and cut in four slits from the back a little more than half-way. Open out and cut away the parts not required for the letter, the corners should be cut off to indicate the round. Thus the letters O and D would be alike except that the O has four corners cut off, while the D would have only two away. Cut-paper letters are the simplest to space on cover. Arrange letters, make light pencil marks to indicate spot, and paste on later. After any pasting is done, place under weight to dry.

EXERCISE VI.

To make paper furniture, using construction paper, for living room in doll's house. The pieces should be larger and decorated more than in Grade I.

Time.

Four weeks.

Materials.

Construction paper, $4\frac{1}{2} \times 4\frac{1}{2}$, 6×6 , $7\frac{1}{2} \times 3$, 6×9 , scissors, paste, wax crayons.

Aim.

1. To teach accuracy in measuring inches and half inches.
2. To teach accuracy in measuring on paper and in cutting to line, and to construct simple types of furniture.
3. To make suitable decorations on such articles as may be decorated by line borders, or by showing upholstering.

Minimum.

Table, large chair, Chesterfield, fireplace, at least. This includes making and decorating. Each pupil should make these four pieces.

Suggestions.

It would be well to drill the pupils on measuring articles, as books, to draw lines 3 inches, $3\frac{1}{2}$ inches, etc., until each knows inches and half inches; the first article should be made with drawing paper that pupils may see the necessity of accuracy, and learn where to cut exactly. The decorations should be drawn before the work is pasted together. The sizes of paper—box of chair, $4\frac{1}{2} \times 4\frac{1}{2}$; back of chair, like arm chair, $4\frac{1}{2} \times 3$ inches. For table, 6×6 ; box for Chesterfield, $4\frac{1}{2} \times 7\frac{1}{2}$; back of Chesterfield, $7\frac{1}{2} \times 3$ inches.

EXERCISE VII.

To model and draw animal toys, or animals or birds, in flat tones, toy teddy bears, rabbits, elephants, chicks, etc.

Time.

Four weeks.

Materials.

Plasticine or clay, paper $4\frac{1}{2} \times 6$, wax crayons. Use pictures if objects cannot be had.

Aim.

1. To learn to express more correctly the shape of certain animals, largely by outline method rather than method in Grade I.
2. To give practice in observing the relative sizes of different features, as head and body.
3. To teach the more exact modelling of various animal or bird shapes.

Minimum.

Three shapes should be modelled and drawn. Select ones that have some difference in shape, as a teddy bear, a rabbit, and a chick. The drawings should not be large, when trimmed perhaps not larger than on paper 4 inches square. Give three lessons to each type.

Suggestions.

More attention may be given to the drawing of rather prominent details, as in the drawing of vegetables. No shading need be attempted; aim rather to get the shape and proportions.

EXERCISE VIII.

Illustration problems, using line-action figures and figures more filled out, with more attention to surroundings. Such stories as Hiawatha or Robert Louis Stevenson's stories for children, etc. Size $4\frac{1}{2} \times 6$.

Time.

Four weeks.

Materials.

Paper, wax crayons.

Aim.

1. To develop power to imagine more realistic scenes, and ability to express same.
2. To improve the expression of action by line-action figures.

Minimum.

Much practice is necessary, but two types should be completed in the time, one in purely line-action and with line surroundings; the second in figures more filled out, and with trees, wigwam, boat, etc., more carefully drawn. Drill on each feature and encourage memory-drawing to some extent.

Suggestions.

Review stick-laying and action-drawing in Grade I. Discuss the situation in the scene chosen. In the work done help by explaining difficulties in proportion and position; if necessary, dramatize scene, and let pupils indicate where the other factors in the scene should be placed.

EXERCISE IX.

To make and decorate furnishings for the room, as window curtains, table runner, portieres. Use stick-printing.

Time.

Three weeks.

Materials.

Paper cut to proper size for windows, or for table, to harmonize in color. Stick-printing sets.

Aim.

1. To review previous work in making borders, using two sticks.
2. To provide drill in using rulers for spacing accurately, beginning at corner and spacing to work out evenly.
3. To review color theory for this grade.

Minimum.

At least curtains for window, and table runner. In the former the curtains may be cut from a square piece of paper, the piece along the top cut from one side of the square, and the side curtain made by cutting the balance in two pieces.

Suggestions.

The spacing, so that the corners may come out right, is part of the problem; also discuss the color schemes of the article and decoration.

EXERCISE X.

To draw plant forms in crayon and to make freehand cutting of same in paper.

Time.

Four weeks.

Materials.

Drawing paper $4\frac{1}{2} \times 6$, and wax crayons, tinted enginex paper and scissors. Mounting paper and paste.

Aim.

1. To review color theory for this grade, naming of six standard colors and normal colors, tints and shades.
2. To draw flower and leaf shapes, as tulip, daffodil, or other flowers, with more attention to details than in Grade I.
3. To make by freehand cutting leaves and flowers and to arrange same in a small cut-paper vase. This is training in arrangement.

Minimum.

Three lessons each on drawing two flower types, and three on freehand cutting and mounting of one of these.

Suggestions.

Flower shapes, while generally symmetrical to some extent, are as a rule more difficult to draw than vegetable shapes. Drawing is first seeing, therefore lead the pupils to notice various details that are characteristic of the plant or flower. Draw with the pupils, at first discussing each point with them. Later another effort should be made without the blackboard aid. Three attempts with careful teaching should yield the results it is

possible to get. In paper-cutting, aim for expression and arrangement of pieces. This is the proper place to teach arrangement.

SUMMARY.

The pupil who has covered carefully the above course should have had practice in the following:

Representation.

Modelling and drawing certain vegetable and animal shapes, also toys and plant forms in the flat. They should begin to notice certain main characteristics of these objects and express these in a simple way.

Illustration Drawing.

Visualizing simple action stories, and expressing fairy landscapes through the assistance of the imagination. Training in regard to relative proportions of the various parts.

Color.

Recognizing and naming the six standard colors, and making tints, normal colors and shades of these hues.

Lettering.

Cutting with reasonable care the letters of the alphabet from paper key-forms. The idea of spacing letters is brought out. The line capital and small letters made with a fair degree of success.

Design.

Learning the simple elements of a border or all-over pattern and the making of a simple border design in cut-paper and the use of two sticks in the formation of border.

Composition.

Planning a simple landscape in cut-paper, and cut flowers and leaves in good arrangement.

Industrial Processes.

Using scissors in freehand cutting and in definite cutting as well; the use of paste.

Construction.

Making simple measurements of inch and half-inch and construction of simple furniture pieces from cut-paper.

Appreciation.

By encouraging the children to talk about their finished models and by suggesting ways of improving these, to lead them to consider more critically than they otherwise would, all work completed.

Picture Study. (See note, page 90.)

1. "Divine Shepherds" (Murillo) 683.
2. "Feeding Her Birds" (Millet) 521.
3. "Helping Hand" (Renouf) 596.
4. "Angel Heads" (Reynolds) 861.
5. "Madonna of the Chair" (Raphael) 324.

Supplementary.

6. "Miss Bowles" (Reynolds) 865.
7. "A Fascinating Tail" (Bonner) 1099.
8. "Which Do You Like" (Holmes) 1065.

Summary of Materials for Year's Work.

Clay or plasticine.

Cream manilla drawing paper, half of 6 x 9 size.

Enginex or poster paper cut in strips and of suitable colors for paper cutting.

Wax crayons.

Scissors, about 4 inches long.

Stick-printing sets.

Paste—A good paste may be made as follows:

1 oz. of alum dissolved in pint of water. Add wheat flour sufficient to make a consistency like cream. Add a little ground resin before boiling, or a little dissolved glue. Stir in after boiling about one-half ounce of oil of cloves. Pour paste in a stoppered jar. This paste will keep for months, and will be found equal to best office article.

Materials for a Class of Ten Pupils for One Year.

A.

10 boxes of wax crayons (8 colors in box).

10 Stick-printing outfits.

10 Scissors.

2½ lbs. of plasticine. Small jar of paste.

(The above articles should in most instances be regular equipment, and will last for years.)

B.

180 sheets cream manilla paper, 6 x 9.

50 sheets construction paper, 9 x 12.

50 sheets enginex paper, 9 x 12.

The colors for the construction should be light brown, medium brown, dark brown. For enginex similar colors, also same tones of green and of blue.

GRADE III.

The course for this Grade has the following aims:

1. To train the child to see and draw in two dimensions. In

doing this it is not the minute details to which attention should be directed, but rather the proportions and the larger features. These the child should learn to see and draw.

2. To teach the child to be very exact in measuring to inches and half inches, and to be very careful in cutting to line, that the construction exercises may be made as well as may reasonably be expected from careful pupils in this grade.
3. To relate the decoration of objects to the objects themselves, that the pupil may see why certain decorations are necessarily chosen for one type of object and quite different ones for others.
4. To interest the child in pictures he is able to understand, and to give him opportunities to make choices between good and bad in his own work and that of his classmates.

EXERCISE I.

To model and draw twigs or flowers.

Time.

Four weeks.

Materials.

Clay or plasticine, cream manilla drawing paper, size $4\frac{1}{2} \times 6$, wax crayons.

Aim.

1. To have the pupil examine more carefully the shapes of leaves, and how attached to the stem.
2. To model in bas-relief, i.e., to model in such a way that in the case of a leaf the edges are slightly raised to present a more natural appearance, not perfectly flat.
3. To review colors, and to teach the simple blending of colors, using crayons.

Minimum.

The specimens should not be larger than three leaves and branch, or flower and two leaves. The modelling may be less than this. One example of modelling, one of twig and leaves in crayon, and one of flower and leaves in crayon, with about four lessons to each, should be sufficient.

Suggestions.

Three or four short lessons on each exercise should be given. The pupils, if at all possible, should have specimens all alike in type, as three leaves and short twig of poplar or willow. Such leaves as wild raspberry or any leaves with deeply cut outlines should be avoided. Question about the shape, the midrib, etc., and now draw same. Collect, criticize, and re-draw, until reasonable results are attained.

EXERCISE II.

To draw various tree shapes and a road, and to combine same in making a crayon landscape.

Time.

Three weeks.

Materials.

Manilla drawing paper, $4\frac{1}{2} \times 6$, and wax crayons.

Aim.

1. To study the beautiful shapes of trees, e.g., tapering, as spruce, the elliptical, as Balm of Gilead, or maple, the more slender, as Lombardy poplar, and to draw same so that each may be distinguished.
2. To express the appearance of a road, to avoid making it as a line running into the sky.
3. To help the pupil to plan out his landscape with simple elements, as sky, ground, hills, trees, and road.

Minimum.

Each pupil should study three shapes of trees and render these with reasonable proficiency; also the drawing of a road, and the simple planning of a landscape, especially observing balance of parts.

Suggestions.

Try to have examples of these three kinds of trees in good-sized pictures. Ask, "How shall we draw them?" and demonstrate how to render in mass. Plan out a landscape with the class. Render with crayons; some attempt at showing distance may be attempted by making objects in distance lighter in tone and those nearer deeper.

EXERCISE III.

Envelope problem. To plan, draw and construct a simple envelope; to plan line borders with stick-printing sets or with cut-paper; to plan simple all-over patterns and ordinary repeat. Results are to be placed inside envelope.

Time.

Four weeks.

Materials.

Drawing paper, construction paper (9×12), scissors, rulers, paste. Stick-printing sets or cut-paper shapes as square, triangular, oblong, etc.

Aim.

1. To introduce in the envelope problem cutting in a slanting direction, which requires more careful observation and cutting than preceding exercise.

2. To introduce a more complete idea of unit in border, e.g., one produced by uniting other units in a pleasing way. Allow pupils to practice so that they may get some originality in making unit.
3. To plan suitable spacing for all-over pattern of repeats (small in extent), using a unit created by pupil. How large are the units and at what distance should they be placed to look well?

Minimum.

To make and decorate an envelope with simple border. To make an all-over pattern not larger than 4 x 5 inches, both carefully done.

Suggestions.

As stated before, make first plan from ordinary paper, then work on construction paper. The borders should be made on practice paper first, and then on the envelope when sufficient practice warrants same. Plan spacing for all-over pattern.

EXERCISE IV.

To make and decorate with tree motifs, a card having both printing and cut-paper decoration. A cut-paper landscape is suggested; the landscape need not be too realistic.

Time.

Four weeks.

Materials.

Tinted paper of suitable colors, scissors, paste, cross-section paper for printing alphabet, and construction-paper for card, size about 3½ x 6 inches.

Aim.

1. To teach the cutting of tree shapes and other simple features of a landscape.
2. To assemble or arrange these in good composition.
3. To make a line alphabet, and to space certain words with letters of suitable size for some definite card. Such words as "Merry Christmas" are suggested.

Minimum.

Cut various tree shapes, hills, and other interesting features as decided by the teacher; arrange these, paste down, and trim for card. Print alphabet on cross-section paper, print the greetings suggested, and transfer to the card.

Suggestions.

It might be well to give out paper the proper size for trees, etc. This helps the child to get a suitable size. The teacher should direct the printing, that is, as to size of letters, and spacing. After making these on cross-section paper, by pencilling

on back of section paper, the printing may be traced on to card, re-outlined and finished.

EXERCISE V.

To make a booklet on the industrial subject "Wool." To correlate art with composition and other school subjects.

Time.

Five weeks.

Materials.

9 x 12 manilla drawing paper, 9 x 12 construction paper, sewing materials (any ordinary heavy needle and thread will answer), wax crayons, foolscap, pen and ink.

Aim.

1. To teach something about wool and processes in the manufacture of wool, and to illustrate these to some extent, either by drawings or cut-outs. Use written composition for contents of book.
2. To sew together two signatures, and fasten same within cover. To plan cover, print title, illustration and author's name on outside, using cross-section paper.
3. To make simple drawings, as "Sheep," or "Spinning wheel" (side view only). Other examples may be cut from catalogue, etc. Mount same and write a description carefully on foolscap (small pieces suitable for page of book); place inside.

Minimum.

Make booklet, 6 x 9. Make cover and decorate same with "Wool" or "Wool Booklet," student's name or initials and line border. Plan a series of simple compositions on processes. Draw a sheep, a spinning wheel, etc., suitable in size for book, and paste inside. Write compositions and paste in book. Sew book in cover when complete.

Suggestions.

Take each part in order, planning with care. Do not be content unless booklet is well done. The drawing and writing may be done on other paper and when well executed, trim and place in book. This prevents careless work and minimizes "accidents."

EXERCISE VI.

The construction and simple decoration of a tray and small paper box with cover.

Time.

Four weeks.

Materials.

Manilla drawing paper, rulers, scissors, construction paper, 6 x 9.

Aim.

1. To teach exactness in the measuring of inches and half inches, and care in cutting exactly to line.
2. To make line-decorations for box or tray before it is fastened together, teaching that a line-decoration should follow the contour of the box if harmony of line is to be achieved.

Minimum.

The construction of a tray, and a small covered box, each decorated with line or cut-paper decoration.

Suggestions.

The first tray may be made from a circular shape, showing how a circle may be drawn by a circle marker. The square base first drawn, the diagonals of square, with intersection as centre draw circle. Before attempting this problem have pupils measure many objects (as books, desk, etc.), to become familiar with inches and half inches at least. Teach accurate measurement by drawing lines exactly so long, as $4\frac{1}{2}$ inches, etc. First make work on drawing-paper, or scribbling paper, to teach accuracy of making and cutting (pupils see the need for this after an example is made), then make on construction paper, decorate and fasten together. Correlate this work with exercises in arithmetic—"What size of paper is necessary to make a tray, 4 inches square at bottom, and sides 2 inches high?" etc.

EXERCISE VII.

To draw manufactured objects of cylindrical or hemispherical shapes. The object should be placed below eye level so as to show the top.

Time.

Four weeks.

Materials.

Drawing paper, crayons.

Aim.

1. To teach the pupil to observe and draw objects which are simple in contour, as mugs, bowls, toys, and of simple construction.
2. To show how to express the round top of such an object when it is slightly below the eye-level.
3. To render in even tone of color, or black and gray, showing the interior or elliptical part of drawing in a different color from that of the outside.

Minimum.

1. A cylindrical object, as mug, pint, or quart measure, etc.
2. A hemispherical object, as bowl, cup, etc.
3. A toy, as small cart, showing side view: such an object which shows the round part (here a wheel) as a circle and not as an ellipse as in the above. Render in flat colors, but in different tones for different parts.

Suggestions.

The object is to train the pupils to see and draw. The seeing is perhaps the more important. Question them as to what they see, about the shape, the best size, the proportions. Draw, criticize and draw again, etc., until the mistakes are generally corrected.

EXERCISE VIII.

A craft problem, as knitting, using woollen yarn, or, as alternative problem, making designs for different vases or similar objects in cut-paper and decorating with cut-paper shapes.

Time.

Four weeks. In alternative problem, three weeks should be sufficient.

Aim.

In first instance to teach knitting with two needles. The object may be a small mat or a larger project, as the teacher may decide.

In second or alternative problem, the aim is to cut symmetrical paper shapes (fold the paper and cut), and by varying the height or width to allow the pupil to judge the best.

To teach where design is most suitable, and to cut a few simple types in paper to illustrate.

Minimum.

A finished project in either. In second problem a vase that is taller than it is wide, and one that is wider than it is high should be made, the first about five inches high, and the second five inches in width. Do not show the top; top and bottom are straight lines.

Suggestions.

In first problem it may be well to start a few at a time; one pupil can help another often.

In the second, teach by cutting out and showing these facts:

1. That the widest part of the form should be either above or below the middle.
2. That curved sides look best where there is a constant change of curvature throughout.
3. That by varying the width in the first, or varying the height in second, there will be one type that seems most

pleasing. Make this. In decorating where should cross-bands of paper be placed, of what width, and with what decoration of a simple type, as cut-paper triangles. Which would be most suitable?

EXERCISE IX.

Costume design and color study. To plan simple design for girl's middie dress or boy's scout uniform, in cut-paper; attention to spacing. To teach color hues of yellow-green, yellow-orange, etc.

Time.

Three to four weeks.

Materials.

Tinted paper of suitable tints (or tint the paper with crayons), paste. Cut shapes of figures.

Aim.

1. To see that each feature, as blouse, skirt, belt, cuffs, collar, etc., is discussed as to size, width, etc.
2. To teach the use of suitable colors so that harmony results. Discuss various hues, and make hues mentioned above.

Minimum.

At least a girl's dress and a boy's suit, each determining the colors, lines and accessories that are most suitable. Overcoats suitable for each may then be taken up, the length, buttons and trimmings.

Suggestions.

First a cut-paper shape of figure (this may be traced from any fashion sheet showing boys' suits and girls' dresses). The teacher should cut the shape from manilla tag, thin cardboard or thick paper, and pass around class, each pupil making a tracing. Discuss the lines, widths of the trimmings, the spacing and the colors. Allow latitude for individual wishes re colors. After each is made (a cut head may be used), criticize the proportion, the widths of trimmings, etc., and colors selected. Another trial may be made until the pupils have thought through the problem in its various aspects.

EXERCISE X.

Illustrative composition, a correlation with Literature, Supplementary Reading.

Time.

Four weeks.

Materials.

Tinted paper, wax crayons or pencil.

Aim.

1. To visualize some feature in literature or story.
2. To express the action better than in Grade II. Here the heads and bodies may be expressed in mass while the legs and arms are in line drawing.
3. To draw from other pictures certain features necessary for proper expression, as walls of city.

Minimum.

Two different stories may be attempted, such as "William Tell," "Dr. Grenfell's Adventures," or "Madeleine de Vercheres."

Suggestions.

Tell the story, show illustrations of different features in the surroundings, but not the actual picture itself. Practise representing figures in action. Let each make the picture, criticise where faulty, and try again. Use this method with another type of illustration.

SUMMARY.

The pupil who has covered the above course should have had practice in the following:

Representation.

The observation and drawing of objects in nature, as twigs and flowers, trees, etc.; animals, as sheep, etc.; and manufactured objects, as cylinder or hemisphere type, and other simple objects; modelling leaves in bas-relief.

Illustrative Drawing.

Visualization of simple stories and expressing these in drawing so that the background is important, as well as the movements of the chief figures; expressing the body and head in mass and the limbs in line.

Color.

Reviewing the work in Grade II. Other hues as yellow-green, blue-green, etc., making twelve in all. Normal tints and shades of colors.

Lettering.

Using line capital letters, and planning simple spacing of words within a given space.

Design.

Exercises which may lead to the beginning of creative ability on part of pupil; using stick-printing or cut-paper designs; making borders and all-over patterns of new types of units superior to Grade II.

Composition.

Planning landscape arrangements, book covers, book pages, costume arrangements.

Industrial Processes.

Use of scissors. Making working drawings with some degree of carefulness and accuracy of cutting. Knitting.

Construction.

The measuring, cutting and constructing of simple boxes, cards, envelopes, booklets.

Appreciation.

By encouraging the children to talk about their finished models and by suggesting ways of improving these, to lead them to consider, more critically than they otherwise would, all work completed.

Picture Study.

(See note, page 90.)

1. "Children of the Shell" (Murillo) 677.
2. "Prince Belthazar" (Velasquez) 662.
3. "The Brothers" (Vogel) 3053.
4. "Shoeing the Bay Mare" (Landseer) 908.
5. "Distinguished Member of Humane Society" (Landseer) 892.
6. "Girl with Cat" (Hoecker) 1068.

Supplementary.

7. "School in Brittany" (Geoffrey) 1085.
8. "The Sheep Fold" (Jacques) 505.

Summary of Materials for the Year's Work.

Clay or plasticine.

Cream manilla drawing paper, 6 x 9, and 9 x 12 (for book).

Enginex or poster tinted paper, suitable for paper cutting, and for landscape work, and costume work.

Wax crayons.

Scissors, about four to five inches long.

Stick-printing sets.

Paste.

GRADE IV.

The teacher will keep in mind the following considerations. The course for this Grade aims:—

1. To train the pupil in the use of the brush as a means of expression. To this end nearly every exercise requires its use. In training it should be kept in mind that there are two uses: (1) To make lines or letters or brush strokes representing grasses, etc., where the brush should be held

in a vertical direction, with the fingers so holding it as to regulate the pressure on the brush, and (2) to hold it much in the same manner as a pencil or pen, when it is used to put on washes, etc. If training is given at the outset in each method, much trouble later will be avoided. Each method should be taught as carefully as the holding of a pen properly for writing.

2. To have all drawing represented in two dimensions, but with different values of color. Shading has been reserved until Grade V, where it is then emphasized.
3. To encourage more observation and creative ability than in Grade III. Pupils should be expected to make original designs for patterns after receiving suggestions from the teacher. If the pupil is not hurried, he develops a fair amount of creative ability with the use of stick-printing sets.
4. To continue in appreciation the work of Grade III with much the same end in view.

EXERCISE I.

Brush drawing of leaves and twigs, flowers and leaves.

Time.

Four weeks.

Materials.

Brush, black water-color, water-color paper, $4\frac{1}{2} \times 6$.

Aim.

1. To teach children to hold a brush in an upright or vertical direction, and to make wide or narrow strokes by merely increasing or decreasing the pressure on the point.
2. To render leaves (simple ones, as willow or poplar) by one stroke of the brush, and when more facility is gained by two strokes, leaving a narrow strip between to indicate a midrib.
3. To render a stem by a single brush stroke between the leaves.

Minimum.

As this work in actual doing does not require much time, it is plain that practice is the main feature. However, a flower form carefully finished, and one with twig and leaves, should be completed.

Suggestions.

Practise holding the brush and making brush strokes using the color direct from the cake. The paper should not be too rough nor too smooth. Leave a white line of paper between different surfaces, always. The brush should be held vertically.

The little finger is often used to gauge the depth of the stroke.

EXERCISE II.

To make a wash-landscape, having at least trees and hills. Review color theory.

Time.

Three to four weeks.

Materials.

Water-colors, brushes, suitable paper.

Aim.

1. To teach how to use water-colors, to make a wash of color.
2. To use washes of color to make sky, ground, distant hills.
3. To review the drawing of trees in Grade III, and to paint, directly from a cake, a tree in foreground and distant trees.

Minimum.

Each pupil should complete one carefully finished example.

Suggestions.

First practise making color washes. Have the paper held at about 40 degrees, and brush well filled with color; stroke back and forth across paper and allow color to run down. Use slightly different tones of color with heaviest tone in foreground. Plan simple landscape, put on washes, and lastly the trees. Before doing so practise making trees on other paper. The pupils will require to make two or three efforts at landscape to get a satisfactory Grade IV result.

EXERCISE III.

Envelope problem; to plan, make working drawing, construct, decorate with modified stick-printing border, or with cut-paper. Make all-over pattern, showing full drop repeat.

Time.

Four weeks.

Materials.

Drawing paper, double heavy construction paper, ruler, scissors, paste, stick-printing sets, or cut-paper.

Aim.

1. To teach more accurate cutting and measuring than in Grade III, also to make a more difficult envelope, requiring measurements to quarter-inches, and cutting diagonal forms.
2. To measure and plan out a border to fit envelope. This requires careful experimental work.

3. To make an all-over pattern with modified stick-printing shapes, showing full drop repeat; two different units used that harmonize.

Minimum.

One envelope, about 6 x 9, carefully made, decorated with border, "Art Work" printed within. An all-over pattern as given, carefully done, and placed within envelope.

Suggestions.

The type suggested is one with four flags, all slightly diagonal cut, or cut at a slant, thus requiring careful measurements. The envelope should have a depth of a quarter-inch or half-inch. Plan out, make on drawing paper, mark scoring lines, cutting lines and dimension lines. Make on double heavy paper. Make border on other paper, and to get careful measurements, encourage different types, or combination of sticks. In the all-over pattern, make pattern on drawing paper, design different units, select suitable ones and print carefully. Try on construction paper of suitable tints.

EXERCISE IV.

To make a heavy or poster alphabet on squared paper and use same to make a poster.

Time.

Four weeks.

Materials.

Cross section paper, 6 x 9, drawing paper, 6 x 9. Brushes, color, etc.

Aim.

1. To teach poster or heavy letters.
2. To plan out a poster, the arrangement, etc.
3. To render same in color (black water-color).

Minimum.

To make an alphabet of poster letters, to make and illustrate a poster, as "Wheat for Sale," or "Hockey Today," etc.

Suggestions.

Use squared paper for alphabet, even for poster if thought best. If letters are one inch high, width of stroke should be one-quarter inch. Plan out poster. In first use as illustration a simple design, as a bushel measure of wheat, showing wheat at top, rendered in flat color. A border about poster would complete same. Practise on rough paper first and on good paper when ready.

EXERCISE V.

To make a booklet on the industrial subject, "Milling." A correlation with composition, writing, etc.

Time.

Five weeks.

Materials.

Double-weight construction paper for cover, 9 x 12 drawing paper for leaves, sewing materials, brushes, black water-color, writing materials.

Aim.

1. To teach the general features of milling process, as seeding grain field, reaping, threshing, shipping, storing, milling, baking. To illustrate some phase of each and to write a short composition on each.
2. To make booklet of two signatures of three sheets of 9 x 12 drawing paper each, sewn together (size of booklet 6 x 9). When finished to sew inside cover, which has been suitably designed.
3. To design cover, including title, pupil's name, decoration and border. To treat each page as a lesson in arrangement, as to placing of illustration, written matter and line border about page.

Minimum.

The booklet made, cover designed and completed, also much of interior work. The composition naturally belongs to that branch of the curriculum. Whatever is done, have it done well; complete the book later.

Suggestions.

Take up each part in order, planning with care. The illustrations will make good lessons in brush drawing. Illustrations suggested are: Seeding, blades of wheat, by brush strokes, grain field, brush drawing of heads of wheat, and part of stalk; reaping, as brush drawing of stooks; threshing, as a sack of wheat, etc. Space the letters for cover carefully; use line letters, pencil or black water-color. The cover design should be carried out on practice paper first.

EXERCISE VI.

To plan, make working drawing, construct, and decorate a folding box, using double-heavy paper.

Time.

Three weeks.

Materials.

Heavy paper, drawing paper, at least 8 x 8 inches; rulers, scissors, brush and water-color.

Aim.

1. To teach the pupil to measure to quarter inches exactly, and to use scissors carefully in cutting to line.

2. To make a working drawing, and discuss with the pupils each step in the same. To show how various lines (as cutting lines, scoring lines and dimension lines) are indicated on a drawing.
3. To plan a simple brush-line border, for top, and line-letters, as "Candy" or other title, as may be decided.

Minimum.

A working plan should be made by each pupil, a box made, decorated, and completed. The box will not require glue or paste.

Suggestions.

A sheet of paper 9 x 12 will make a box $2\frac{1}{2}$ x 6 inches on top, and $1\frac{3}{4}$ inches deep, and allow $\frac{1}{2}$ inch lap. Decorate box before folding. If an error is made another piece the size of the top may be made and pasted on same. It is a good exercise in arithmetic to see what size of box may be made from 8 x 10 paper, or what paper is required for a box, say 3 x 4 x $2\frac{1}{4}$.

See "Paper and Cardboard Construction" (Buxton & Curran), p. 79.

EXERCISE VII.

Brush drawing of objects in simple groups of two objects.

Time.

Four weeks.

Materials.

Various types of objects, drawing paper $4\frac{1}{2}$ x 6, water-color, brush, etc.

Aim.

1. To take up the rendering of various types of objects, as cylindrical, hemispherical, or conical shapes.
2. To teach more thoroughly the correct shapes of the articles used, and the finer proportions.
3. To render with a brush, showing a white line between each different type of surface. To render in different values of gray or of any other color selected.

Minimum.

At least two examples, one in black, and the other in color throughout, with white lines of paper showing between the various surface. A second may be in values of gray to black, or the values of some other color. In doing this several lessons will be required to get any degree of accomplishment for the grade.

Suggestions.

Take up the matter of suitability of objects, the position or arrangement to look best. In handling brush begin with one

simple object; and color one surface black, then the adjoining surfaces; correct for proportion, etc. Hold brush nearly vertical for coloring with black.

EXERCISE VIII.

There are three choices for this exercise:

1. To make a small raffia basket, using reed as the foundation.
2. To continue the knitting problem, as the making of wristlet, using four needles.
3. To design several vase shapes, using brush line and black water-color.

Time.

Four weeks.

Aim.

In either of the first two, an opportunity is given to think through the problem of making objects by means of certain stitches. The mastering of these, and controlling the shape, will enable the pupil to produce quite satisfactory craft problems. In the third, the aim is to teach the pupil the fine types of lines and of proportions in fine vases or jardinières.

Minimum.

This is difficult to define, but the basket should be small if finished within the time limit. The knitting might include the introduction of borders. Knitting as mentioned above should be continuous, as making a wristlet. In third problem several shapes should be made, at least a tall vase, a short broad type, and one nearly the same in dimensions (length and breadth).

Suggestions.

In third problem, see suggestions in Grade III. The difference is that here the work is rendered in ink line, holding the brush in a vertical direction, and slowly tracing the shape which is thought best. There should be much practice in this problem, both in getting a good shape and in the brush work. Painstaking care will bring success.

EXERCISE IX.

Summer costumes and winter costumes for boys and girls.

Time.

Three to four weeks.

Materials.

Water-color paper, brushes, scissors, paste, color box.

Aim.

1. To discuss lines, proportions of garments suited to boys and girls.

2. To discuss color hues, tints and shades, or values of color, and why certain colors are more becoming than others.

Minimum.

Two problems each, a summer and winter suit for a boy, also a summer and winter dress for a girl.

Suggestions.

In any costume, include blouse, skirt or trousers, stockings. Figures traced from pattern sheets and placed on tag manilla or heavy paper and cut out should be used as foundation. Two patterns will be required, one for boys and the other for girls. Plan the main parts first, avoiding areas of same size, vertical stripes for tall girls or boys, or horizontal ones for those who are stouter. Deal with the accessories (as ties, cuffs, belt, stockings), how large each should be, etc. In color study the colors which are suited to summer and those to winter. A color should not be too strong for the complexion. If we have golden or reddish hair, what colors should be avoided? What colors look best on us? Can you think why? Paper tinted with proper color, and forms cut will complete the work.

EXERCISE X.

Illustrative composition from history or other sources in school subjects. The past history of the country, when inhabited by Indians, may be useful to illustrate, as an Indian encampment, navigating the rivers, a fur-trading post, etc.

Time.

Four weeks.

Materials.

Water-colors or pencil, drawing paper, pictures to show views that are unfamiliar to the pupils. A picture illustrating the theme selected should not be shown.

Aim.

1. To visualize the incidents in the theme selected, and to express same sufficiently well to be understood. No artistic work is expected, but rather a graphic record of the incident. Such figures as are shown should be filled out, not line type.
2. To render in values of gray and black.

Minimum.

Two stories should be attempted. This is better than one which is too involved.

Suggestions.

Would discuss in history lessons the incidents which seemed most vivid and interesting. Search out material illustrating such features as a pupil might wish to incorporate in his illustration,

as wigwam, etc. After one attempt discuss where the results might be improved. If the drawing is poor then practise those features that require improving.

SUMMARY.

Representation.

To use the brush in representing twigs, flowers and leaves, still life, grasses and grains, etc., holding mainly in vertical direction, and to make simple wash landscape.

Illustrative Drawing.

To visualize simple scenes of early Alberta history and to render these with some degree of accuracy according to facts. Figures should be rendered in mass, not line.

Lettering.

To learn two alphabets as line for books, etc., and mass types which are suitable for single posters. To learn to space letters, allowing the space between the letters of a word to be approximately the same.

Design.

More originality on part of pupil designing units, and in planning borders for certain lengths. The full drop-repeat in all-over patterns should be expected.

Composition.

To plan book covers, posters, landscape compositions, costume arrangements suitable to the grade.

Industrial Processes.

Continued from Grade III, more accurate working drawings and cutting. Knitting, raffia basketry, of a simple nature.

Construction.

To measure, cut and construct booklets 6 x 9, with cover made from double-heavy paper. To plan boxes of same material, involving $\frac{1}{4}$ inch measurements. To make simple envelope, more difficult than Grade III.

Appreciation.

To help children appreciate the beauty in certain pictures.

Picture Study. (See note, page 90.)

1. "Arrival of the Shepherds" (Lerolle) 620.
2. "The Gleaners" (Millet) 511.
3. "The Balloon" (Dupre) 600.
4. "Shepherdess Knitting" (Millet) 516.
5. "Little Scholar" (Bougereau) 569.
6. "Mother and Daughter" (LeBrun) 525.

Supplementary.

7. "The Village Blacksmith" (Herring) 887.
8. "The Water Mill (Hobbema) 753.

Summary of Materials for the Year's Work.

Paper—Drawing paper 6 x 9 and 9 x 12 for book. Cross section paper $\frac{1}{8}$ inch. Enginex or poster paper. Construction paper double-weight, 9 x 12, 13 x 14.

Five-color box; red, yellow, blue, white and black; brush, stick-printing sets; paste; scissors; rulers, etc.

GRADE V.

The work outlined for this grade aims:—

1. To train the pupil in the use of the pencil as a means of expression and to render objects in at least three values of gray, using pencil. To introduce the idea of shading, and such terms as "high lights," "shadow," and "cast shadow."
2. To introduce a development problem, which here may be a conical lamp shade, showing working drawing and construction.
3. To introduce the idea of complementary harmony in color. This involves also the idea of graying colors by use of a complementary color.
4. To link art with practical problems in the form of an interior decoration problem.
5. To introduce the principles of composition and good spacing; selecting by means of a finder a good composition from still life group; and the use of coloring as a decoration.

EXERCISE I.

Pencil rendering of animals and birds.

Time.

Four weeks.

Materials.

Drawing paper, 6 x 9, HB or B pencil. Illustrations of birds and animals.

Aim.

1. To get the pupils to observe more carefully the general proportions of the different parts.
2. To observe the details, as feet, bill, wing in birds; and feet, parts of the head, and general structure of animals, more definitely than before.

3. To render side view in pencil, first showing the direction of the pencil strokes in the various parts. Render in flat tones.

Minimum.

To draw and re-draw two types, an animal and a bird; to render in pencil, and to criticise until reasonable results are attained.

Suggestions.

Good pictures of animals and birds should be ready beforehand. Study carefully the proportions and draw in the air; when ready draw quickly, criticise and re-draw. Examine details and draw these, and when satisfactory shapes, etc., are obtained, take up pencil rendering. Practise this; then render a figure. Continue until two examples are completed.

EXERCISE II.

To make a conical lamp shade with double-heavy paper, and plan a circular border for same, using squared animal or squared bird design on same as cut-out pattern.

Time.

Three to four weeks.

Materials.

Ordinary paper to get pattern, drawing paper for working drawing, double-heavy paper for lamp shade, knives, squared paper for patterns, tinted enginex paper to give color to openings.

Aim.

1. To teach the making of a developed or cone-shaped surface of any definite slant.
2. To begin conventional decoration with an animal or bird motif made by using a cross section paper.
3. To apply this pattern as border to lamp shade, to cut out and apply enginex paper on inside.

Suggestions.

Have each pupil cut out a circular piece of paper, say 10 inches in diameter, cut along a radius, and fold over until proper slant is obtained. Mark this, allowing $\frac{1}{2}$ inch for lap. Cut opening at top of lamp. Make working drawing, increasing radius to proper length. Cut out shade from double heavy paper. Make a small drawing of bird or animal made above, say 2 inches high, place on squared paper, trace to nearest square, and place in other markings. Cut out as stencil, place on lamp shade, at close intervals to make a continuous border and cut out. Turn over shade and paste enginex paper of proper tint over openings. Then paste shade together.

EXERCISE III.

To make an extension envelope, using double-heavy paper, and to decorate same with border. Certain capital letters of alphabet, as H, T, E, suggested as motifs.

Time.

Four weeks.

Materials.

Double-heavy paper, scissors, water-color, brushes, etc.

Aim.

1. To plan out a more difficult type of envelope than in Grade IV, involving close measurements and accurate folding in form of pleats.
2. To decorate with border made of units as given above; to measure carefully that the border may end at equal distances from the ends of the envelope, and at equal distances from the sides.

Minimum.

To make and decorate envelope.

Suggestions.

The chief difference between this envelope and that in Grade IV is that the ends are made in a series of pleats, say three pleats of $\frac{1}{2}$ inch depth. These should be very carefully measured, scored and folded. The central part should be made of uniform width, say 7 inches wide throughout. The pleat part on each side will take about $3\frac{1}{2}$ inches by 5 inches, the width of the envelope. The thickness should be allowed for, about $\frac{1}{2}$ inch. The envelope here given can be cut from 13×14 paper. This allows a flap of $2\frac{1}{2}$ inches.

Decorate before gluing together. Plan out decoration on other paper of same size; allow pupils to plan units which may be $\frac{1}{4}$ inch high. Borders may be made by the repetition, in a compact line, of a capital letter. If every other letter is inverted, variety may be obtained. The letter T lends itself to this type of arrangement.

EXERCISE IV.

Poster problem using an illustration made in decorative manner.

Time.

Three to four weeks.

Materials.

Practice paper, 6×9 or larger, depending on illustration, cross section paper, good drawing paper or construction paper, colors, brush, etc.

Aim.

1. To plan or space out the features used on poster.
2. To render the illustration in flat colors, in good harmony, yet with some carrying effect.
3. To plan carefully the letters, using heavy poster letters, on squared paper and showing variety in the horizontal strokes in these letters. To plan same on poster and finish in good color.

Minimum.

Make and finish one good example of a poster.

Suggestions.

Such a title as "Protect Our Birds" with birds drawn in Exercise I as an illustration is suggested—or "Be Kind to Animals" or similar title. Plan out the poster, the place for the illustration and the printing. (Heavy letters $\frac{1}{4}$ inch wide in stroke should be used.)

Plan letters on cross-section paper and decide where the cross strokes as in B, A, etc., would look best. Now make on poster, watching the spacing, so that the space between each letter is approximately the same. Draw illustration. Finish the same in suitable flat color; any markings can be made in black. A line border may be placed about the poster.

EXERCISE V.

To construct booklet to correlate with history as "Local History," including the making of book of three signatures. Decorating cover, illustrating and writing up local history.

Time.

Five weeks.

Materials.

Padding board or pulp board, $6\frac{1}{4} \times 9\frac{1}{2}$ drawing paper for pages of book, cover or construction paper, needle, thread, paste, water-color and brush.

Aim.

1. To correlate the industrial art for this grade with the history of the neighborhood and province.
2. To teach how to make a booklet, the sewing of signatures together, the construction of the cover, and the placing of same on booklet by pasting outer leaves to back of book.
3. The decoration of the cover showing title and pupil's name with border about same. The booklet part may be begun when the history work is commenced.

Minimum.

To make and complete book. The filling may take a longer period to complete than the five weeks, as the material to be written in may be given during a longer period.

Suggestions.

Begin by making the pages of the book 9 x 12 folded once; plan the topics to be taken up and decide upon the illustrations needed for the different topics. Each page should be a design problem and a line-border should be placed around it. Take up interesting features of history, write same in booklet and make such illustrations, maps, etc., as will assist in the work. Next sew the signatures together. Each signature should be made of three sheets 9 x 12. Prepare materials for cover, pulp board, cover-paper and cloth for back. Construct the cover first to show method. In placing the book inside the cover, paste the outer leaves to the inside of cover, first on one side and then on the other. After any work with paste is completed the book should be placed under a flat weight until dry, otherwise the cover will curl up. Place several thicknesses of newspaper between cover and book, both at back and front, to prevent damp (in paste) from causing book to wrinkle. Plan out cover design on cross-section paper; take great care with spacing of the border, the title and the author. Make a line alphabet so that the horizontal strokes in the letters may be varied somewhat from the middle. Use this type of letter on work.

EXERCISE VI.

To make a cardboard box with cover and to show working drawing of same. On cover place all-over pattern made from capital letters as motifs. The spacing for decoration is to conform to size of the box.

Time.

Three to four weeks.

Materials.

80 pound pulpboard, 7 x 10 (depending on size of box). Construction paper to cover same, scissors, paste.

Aim.

1. To teach children to measure accurately to eighths of inches, and to construct a lid to fit a box. To make working drawing. To plan an all-over pattern for the cover in such a way that the pattern comes to the edge of the cover evenly.
2. To put cover on box and complete same by using drop repeat pattern (letter motif).

Minimum.

To make a box and decorate same.

Suggestions.

The box part may be 6 x $3\frac{1}{2}$ inches with a depth of $1\frac{1}{4}$ inches, and the cover $6\frac{1}{8}$ x $3\frac{5}{8}$, with a depth of $\frac{3}{4}$ inch. The box can be made from 6 x 9 and top also from like size with slight trim-

ming. Make working drawing of each part. Cut out cardboard; score on outside edge, bend into place and reinforce at corners. Make cover paper 1 inch larger each way than cardboard, so as to lay around edge. Rule lightly $\frac{1}{4}$ inch squares and decorate in square units, with brush held vertically or black crayon. When decorated paste on top, cutting away corner parts so that they lap at corners, but no more.

EXERCISE VII.

Pencil drawing of simple still life group of two objects of cylindrical, hemispherical, or conical type, not too intricate in contour. Pencil shading showing high lights and shadow parts.

Time.

Four weeks.

Materials.

Drawing paper, pencils.

Aim.

1. To teach the use of the pencil as a medium of expression, including pencil values, and direction of pencil strokes.
2. To take circular perspective in a more definite manner, as in the drawing of objects at the eye-level, above and below same, and placed to show a full circle.

Minimum.

Very considerable practice is required in the careful teaching of circular perspective. If possible, two different types of groups should be drawn. Select these carefully, and use objects of different values, one much lighter than the other.

Suggestions.

Place paper on a reasonably smooth but fairly hard surface; practise making pencil strokes, showing different values by varying the pressure on pencil. By using heavy cardboard circular disks, teach the perspective of a circle. At eyeline circle appears as straight line; the farther it is held above or below the eye the wider the ellipse becomes. Then the arranging of group, the sketching and rendering in pencil values should be taught step by step.

EXERCISE VIII.

Color theory exercises; harmonies of color; complementary harmony; the color circle; graying of colors; coloring a copy in complementary harmony, arranged in good composition; the use of a finder.

Time.

Three weeks.

Materials.

Drawing paper $4\frac{1}{2} \times 6$, water-colors, and brush, finder.

Aim.

1. To teach the use of a finder in determining good spacing in any composition.
2. To review color hues and the groups of opposite colors which are complementaries as these complete in themselves the three primaries; and to show the effect of these complementaries on each other.
3. To become familiar with scales of color intensity. To make a complementary harmony of above composition. To use a nearly neutral background made by almost equal quantities of the complementary colors selected, and to paint the objects in the colors selected.

Minimum.

It would be well to make two different types, using two sets of complementary colors. The colors should be slightly grayed one with the other.

Suggestions.

The above requires careful teaching. Use a finder for spacing in order that there may be a pleasing arrangement of larger and smaller areas. Two or three such arrangements may be found in any group. These should be traced or drawn exactly as they appear within the finder. A scale of intensities of any set of complementary colors should be made. Then the coloring of the composition as stated above may be completed. This may require two attempts, as the aim should be to get a balance of tones, not one brighter than the other.

EXERCISE IX.

To make a plan for the wall of a room, as living room or bedroom, showing spacing, including place for wall trim and openings. To tint paper in color most suitable for room, including wood trim, and pictures.

Time.

Four weeks.

Materials.

Drawing paper 6 x 9, water-colors, brushes, scissors, paste, etc.

Aim.

1. To take up the planning of the wall of a room as an art problem.
2. To discuss the arrangement of the various features in the wall elevation.
3. To discuss the most suitable colors, grayed sufficiently, for the wall, and to make same on paper.

Minimum.

To discuss the arrangement of a living room, its purpose, color scheme, and to make the wall of same of 6 x 9 drawing paper. A bedroom showing wall tints and simple curtains should be done if time permits.

Suggestions.

Make this a very real problem, not mere copy work. Discuss each feature of a wall, its purpose and its fitness, the trim, openings, walls, pictures, etc., then the colors that would be suitable and would make a good color scheme. Paint same. The colors of a bedroom should be lighter. If time permits paint a scheme for a bedroom wall.

EXERCISE X.

To make an illustration of various scenes in the early history of Alberta, rendering same in pencil.

Time.

Four weeks.

Materials.

Drawing paper, not more than 5 x 6½. Pencils.

Aim.

1. To visualize the scenes of early pioneer life, as an Indian camp, a boat-load of furs coming down river, the first shack or dwelling.
2. To plan out the scene thus visualized, and secure such materials as will help in drawing any difficult parts.
3. To render same in pencil, showing light and dark, or values in pencil.

Minimum.

Two scenes may be represented, three lessons on each at least.

Suggestions.

Allow the pupils considerable latitude in planning out the scenes, criticise the arrangement, the drawing, and the rendering, and work over. (Do not take any scene too difficult.) If something is found to be difficult to draw, practise this, and show good examples. Take up carefully the drawing of trees, or distant hills, or bushes, etc., if such are in any picture.

SUMMARY.**Representation.**

To learn to use the pencil as a medium of expression in rendering birds or animals, still life groups, and various features in nature. To teach simple pencil technique and to express roundness in objects by light and shade.

Illustrative Drawing.

To visualize and express with more accuracy than in Grade IV, showing light and shade, certain events in early history, or such other outstanding events as are within the range of this grade.

Lettering.

To be able to draw a poster alphabet of heavy letters, showing variety in placing the horizontal strokes. Also a heavy line alphabet of like type for lettering on book cover.

Design.

To have a clear distinction between abstract design, such as made on cross-section paper from simple abstract motif, and that from an animal or bird motif worked also on squared paper. This introduces conventionalization or adapting nature forms to the purposes of design.

Color.

The consideration of very simple complementary color schemes and of methods of graying colors or reducing their intensity. A choice of colors suitable for the decoration of the walls of a room.

Composition.

To plan a poster, book cover, walls of room and still life group in good arrangement or composition.

Industrial Processes.

The making of a book cover, using cardboard base, and covering same with cover paper. More difficult types of envelopes and boxes.

Construction.

To plan and make working drawings of a development problem of cone type; to plan and make working drawing of covered box problem, and of extended envelope.

Appreciation.

Very simple consideration of the art quality in our surroundings and the appreciation of good color schemes. The study of suitable pictures for this grade, in such a manner that the pupil appreciates the subject, the light and shade, and color scheme.

Picture Study.

(See note, page 90.)

1. "Plowing" (Bonheur) 540.
2. "Christmas Chimes" (Blashfield) 1020.
3. "Sheep—Spring" (Mauve) 757.
4. "Woman Churning" (Millet) 519.
5. "Mellon Eaters" (Murillo) 680.
6. "Dignity and Impudence" (Landseer) 896.

Supplementary.

7. "Oxen Going to Work" (Trojan) 501.
8. "The Shepherdess" (Lerolle) 618.

Materials.

Paper—Drawing paper, 6 x 9 for most exercises, 9 x 12 for book. Cross section paper, to eighths of an inch.

Construction paper, about 7 x 11 for book cover, box cover, etc.

Double-heavy paper, 11 x 14 for extension envelope.

Pulp board, 6 $\frac{1}{4}$ x 9 $\frac{1}{2}$, will answer for book and box.

Water-color box, red, yellow, blue, white and black.

Scissors, rulers, pencils, paste.

GRADE VI

The work of this grade is outlined below:

1. More careful seeing and drawing; the use of accented outline to express shade, and more difficult pencil rendering in plant form, in light and shade. To begin the work in angular perspective by the drawing of rectangular objects placed at various angles.

2. More difficult construction problems are attempted in the pyramidal type of surface development, in the edging of a covered box, and in the binding of a real book.

The course in design continued, the abstract forms being based on the rosette, while the nature forms are based on the side view of plants or seed pods. The use of the stencil from these forms is emphasized.

The problem of **analogous harmony of color** and of its use in printing as in a decorative composition, and in interior decoration is taken up.

In appreciation attention is called to good color schemes, light and shade, and the centre of interest.

EXERCISE I.

To render plant forms, including flower and leaves, in accented outline, and in light and shade with pencil. To examine more closely the plant structure.

Time.

Four weeks.

Materials.

Drawing paper 6 x 9, pencils, each pupil to have a plant specimen of same type.

Aim.

1. To examine more closely the plant structure, the arrangement and type of leaves, the stem, the flower, the method of drawing that would express its nature most clearly.
2. To render in light outline, then in accented outline. To show how to accent the lines of a drawing to give some character to the plant.

3. To render in light and shade, so as to preserve the characteristics of the plant.

Minimum.

Two plants should be drawn, one rendered in accented outline, and the other in light and shade. Each effort, however, should be the result of several lessons. Several types of plants may be used.

Suggestions.

The method is almost suggested above. Each pupil should have a similar specimen. The teacher should question each as to what can be seen about each part, and how the same might be drawn. How can we draw one leaf over another, or a leaf at one side, or toward us? Let the pupils draw, criticise and draw again; then take up the method of rendering in accented outline. How heavy shall we accent for this leaf, or for a heavier type of leaf? The drawing of another specimen and rendering in light and shade in same manner as the above would complete the work.

EXERCISE II.

To teach a further development problem of the pyramid type, which may be a lamp-shade problem. To make a working drawing of same. Construction and decoration on each side of conventionalized pattern from side view of flower.

Time.

Four weeks.

Materials.

Pulpboard, paper for working drawing, rulers, pencils, knives, water-colors and brush, enginex paper, suitable plant motifs, paste, glue.

Aim.

1. To teach the working of a development problem of pyramid type.
2. To construct the object, as a lamp shade, from the working drawing.
3. To cut away a suitable opening in side, leaving the corner pieces of sufficient strength. To make a pattern from side view of flowers or seed pods to decorate these openings. To trace this on suitably tinted paper, make pattern in black and place inside lamp shade.

Minimum.

Each pupil to make working drawing, construct and decorate lamp shade complete.

Suggestions.

Use same method as in similar problem in Grade V to get the proper shape. By the use of a paper form, the length of each

side may be determined by each pupil. A plan can thus be made and a working drawing made accurately from this. Following this, from a piece of cardboard, a lamp shade may be cut out. Before fastening together take up the matter of designing a decoration for the side, and putting in place. Cut out from each side the amount of cardboard that would be a pleasing shape, and on colored paper to match shade. Plan a black colored decoration, using the side view of a flower or seed pod as the motif, and make a symmetrical type of design. Make four of these, paste into place and complete shade.

EXERCISE III.

Stencilling problem. Planning stencil patterns of the rosette type from historical examples and from face view of flowers, or cross-section of seed pods. Wood block or linoleum prints may be made if time permits. To render same on different materials.

Time.

Three weeks.

Materials.

Drawing paper, sharp knives, wax crayons, or water-color. Face views of flowers or ancient types of rosettes. Cross-sections of seed pods.

Aim.

1. To teach how to adapt some motif to a design type of a certain kind.
2. To teach the problems peculiar to the making of a stencil.
3. To render same on paper and on cotton or similar material, using wax crayons.

Minimum.

Much practice should be given in adapting several types of rosettes to purposes of stencil, and in adapting same to border pattern. One completed border should be made.

Suggestions.

The stencils should be very simple, symmetrical in type, but the work of the pupils. The units should be connected by a suitable form so as to make the border seem continuous.

EXERCISE IV.

To make a bulletin or announcement, which shall involve two sizes of letters, and the spacing of letters in a line.

Time.

Four weeks.

Materials.

Paper. Cross-section paper for practice, brush, and black water-color, or round pointed stick, cut off in a slanting way, to touch the paper evenly when held as a pencil.

Aim.

1. First to make a freehand alphabet of capital letters, with modifications in spacing the middle horizontal stroke in each.
2. To learn to space words to make a line.

Minimum.

To make an alphabet of heavy line letters on cross-section paper, and to space and make a bulletin, such as "Concert Practice will be held in the school on Saturday next at 3 p.m." First to space out so that the lines will end together in a rectangular space. The words "Concert Practice" should be heavier type.

EXERCISE V.

Elementary Science note-book, including at least three signatures sewn over tape, bound in a cover made of cardboard covered with construction paper, and reinforced with cloth. To make cover design use suitable drawings of nature forms. Arrange description, etc., neatly in book.

(N.B.—The signatures may be made when science course is commenced.)

Time.

Five weeks.

Materials.

Drawing paper 9 x 12, sewing materials, cardboard covers, $6\frac{1}{4} \times 9\frac{1}{2}$, construction paper approximately 7 x 11, and cloth for back; drawing materials, pen and ink.

Aim.

1. To correlate the work of nature study with art.
2. To construct a bound book.
3. To plan decoration and page arrangement of illustrations and printed work.

Minimum.

To make, sew, bind such a book as described. Make cover plan and complete. Make drawings as suggested and complete by printing or writing in good arrangement on the pages of book.

Suggestions.

The booklet might contain drawing of five plants, showing root system, stem, branches, leaves, flower, or an animal book, illustrating and describing 3 mammals, 5 birds, 1 fish, 5 insects, or other drawings in connection with the elementary science course for Grade VI. In making book, sew as formerly, but sew over three pieces of tape $\frac{1}{2}$ inch by 2 inches. Cover the back

of the signatures with thin cotton cloth, and paste down to outside leaves. Make cover as stated in outline for Grade V. Take up the work for each page, the drawing of specimens, the written or printed work to accompany each, and the arrangement of these on the page. Put on cover design, border, title, etc. When carefully completed, paste book in cover, and allow to stand under a weight until dry.

See under Grade V precautions for preventing wrinkling up of pages.

EXERCISE VI.

To construct a covered box or a sliding box on which the edges will be bound, and sides covered with paper. Decorate with border, having accented corner pattern. This decoration should be applied only to top of box or case.

Time.

Three to four weeks.

Materials.

Heavy cardboard, or padding board, rulers, knives, drawing paper and pencil, cover or construction paper, paste, glue, water-color and brush.

Aim.

1. To make a working drawing of box, after determining the dimensions. (This correlates with arithmetic, and the sizes of cardboard necessary should be carefully worked out as an arithmetic exercise.)
2. To make the box, to cover the edges carefully with binding strips, the pieces to cover each side being very carefully measured and cut.
3. To make a border design, with heavier units at corners, modified letters as M, W, X, or A being used for border, the corner decoration to harmonize with the letter chosen.

Minimum.

A box should be carefully made, working drawings shown, showing all dimensions, scoring lines, cutting lines, etc. The decoration is made on other paper, and when satisfactory placed on cover paper. In all each pupil should complete one box, and working drawing, all carefully made.

Suggestions.

Each lesson should be carefully planned, and not too much attempted at one time. The dimensions should be discussed and the working drawing made after these dimensions are determined. The cardboard should then be carefully measured to accord with the plan, the scoring (on outside of box) and the cutting carefully done, the box made, and corners reinforced. Similarly the lid, the width $\frac{1}{8}$ inch larger, should be made. Next the binding,

using $\frac{1}{2}$ inch strips to match the cover paper, should be put on. Then the cover paper, leaving $\frac{1}{8}$ inch margin at edges of box, should be cut. The sides and bottom pieces may be cut and fitted, and after the top piece is decorated it should be pasted into place. In doing this great care is necessary to keep the work clean. The border decoration is explained, but it requires very careful measurements to make the units fit. This should be carried out on other paper until satisfactory, then put on cover paper. A design in black water-color with brush would be satisfactory.

EXERCISE VII.

To draw rectangular type solids, singly and in groups, from the objects. To determine the key lines in each object and to draw these with some degree of accuracy. The introduction of perspective drawing as a correction only.

Time.

Four weeks.

Materials.

Pencils, drawing paper, suitable objects, large enough that all could see, as a large box or book.

Aim.

1. To find out the key lines in any drawing of rectangular objects, and to get these in proper direction.
2. To complete the object, when these lines are determined.
3. To teach class to examine drawings from this standpoint—"Do they look right?"

Minimum.

To see and draw the key lines and to complete an object drawing when these key lines are determined is preliminary. Then take up the matter of convergence of the lines that show receding edges. In the end finish drawing a group of two objects, and render in pencil, showing different values.

Suggestions.

The aim is object drawing, rather than perspective. A pupil may understand a theory of perspective, but be unable to correct his drawings by the theory. Introduce the theory only as it is needed to make a drawing better. This work requires much practice or drill, and if carried out here the trouble with formal perspective later will be avoided.

EXERCISE VIII.

Color theory, decorative composition in analogous color harmony. Use of finder.

Time.

Three weeks.

Materials.

Drawing paper, finders for each pupil, water-color and brush.

Aim.

1. To review color theory, complementary colors, analogous colors, graying of colors, etc.
2. To select a good composition from Exercise VII, showing a variety of areas, etc., and to make same within a rectangle shown by the finders.
3. To render same in analogous harmony, in two sets of colors in this harmony.

Minimum.

Two examples of analogous harmony, as set out in the aims given above.

Suggestions.

In selecting a good composition, try to get a pleasing arrangement of areas, and in coloring same, try to get an arrangement of colors that will produce a balance of tones. It might be well to gray each color slightly.

EXERCISE IX.

To space and tint a wall of a dining-room or living-room. To cut symmetrical types of furniture from flat washes of color and mount with the above drawing.

Time.

Four weeks.

Materials.

Drawing paper, water-colors, brush, etc.

Aim.

1. To discuss the colors most suitable for the walls of dining-room, and the arrangement of these colors.
2. To harmonize the colors of the wall with those of the furniture.
3. To teach good spacing in breaking up the wall space.

Minimum.

To make, space, cut furniture types and tint the walls to harmonize, place furniture in place, mount. No attempt at perspective should be made.

Suggestions.

Deal with the suitability of colors for various rooms, and where the lightest colors should go; show that colors should harmonize with the furniture (a use for analogous harmony of

colors). Criticise the spacing of the wall, the tinting, the placing of furniture, etc. Make the furniture types first, and then plan the walls with these in mind.

EXERCISE X.

Illustration problem. To illustrate some important event in the history studied during this term.

Time.

Four weeks.

Materials.

Drawing paper, pencils or color. Illustrations of types that may be included in the composition.

Aim.

1. To visualize and arrange the features that enter into a composition.
2. To make drawings from any objects to assist in the composition and to arrange and finish in black and white or color.

Minimum.

To draw, criticise and complete one good example.

Suggestions.

Much care must be taken with the drawing and the arranging of the elements in the picture. The proportions, and the planning throughout should be criticised until a fairly satisfactory result is attained. Then the coloring may be done in black, gray and white, or in flat colors. Keep the composition within the range of the pupil and try for good work.

SUMMARY.

Representation.

More exact observation of parts of plants or animals, and more skill in drawing same; drawing groups of rectangular objects showing good relative proportions and different positions; rendering in accented outline as well as in light and shade and flat values.

Illustrative Drawing.

To visualize and draw with fair degree of accuracy the subject selected. More attention to details and to the representation of distance, middle distance and foreground should be given.

Lettering.

The spacing of letters in a line, as well as in words. To make a freehand type of letter and show its use in bulletins and also the use of a finer type in book covers. A greater use of small letters and figures is required.

Design.

Both abstract and conventional types of design from nature forms and historic types required. More difficult types than in previous grades to be adapted; the rosette type in design, and side view of nature forms conventionalized are suggested.

Composition.

More detail in planning bulletin, book cover, wall, and still life group in good arrangement or composition.

Industrial Processes.

To make and bind a book in the regular way, and to make a box requiring more careful measurements and accuracy of construction. Use heavy cardboard cover paper, the edges of box to be reinforced.

Construction.

To make a careful working drawing of box, and construct same from plan. To make a working drawing of pyramid type of development problem, and construct shade from same.

Appreciation.

To appreciate more and more good color schemes, and the use of color in design and in pictures. To study suitable pictures for this grade in such a manner that a pupil will appreciate the subject chosen, the light and shade, and the color scheme.

Picture Study. (See note, page 90.)

1. "Angelus" (Millet) 509.
2. "The Sower" (Millet) 510.
3. "Song of the Lark" (Breton) 575.
4. "I Hear a Voice" (Earle).
5. "Brittany Sheep" (Bonheur) 550.
6. "Escaped Cow" (Dupre) 603.

Supplementary.

7. "The Haywain" (Constable) 890.
8. "A Kayble". (Schreyer) 816.

Materials.

Paper—Drawing paper 6 x 9 for most exercises; 9 x 12 for book and bulletin. Cross section paper for lettering, etc., $\frac{1}{8}$ inch. Construction paper, about 7 x 11, for book cover, box, etc. Double heavy paper for lamp shade. Pulpboard, of fair weight, cut $6\frac{1}{4}$ x $9\frac{1}{2}$ inches size.

Tape— $\frac{1}{2}$ inch tape, about 6 inches for each pupil for book.

Scissors, sewing materials, rulers, pencils, water-color materials.

Muslin, strips of thin cotton, about 2 x $8\frac{1}{2}$ inches for back of inner part of book.

Bookbinders' cloth, about 2 x $10\frac{1}{2}$ inches for back of book.

Art for General Course

GRADES VII AND VIII.

Introductory.

In Grades I-VI emphasis was placed on:—(a) the attainment of a certain measure of skill in drawing, (b) the development of ability to plan simple cardboard models and to make working drawings, and (c) the stimulation of creative ability by means of simple design problems. In the intermediate grades IV, V and VI more responsibility was placed on the student, who was expected to consider how his drawing might be improved until it looked right.

With the above as a basis the work in Grades VII and VIII consists of an introduction to the laws of composition through a series of graded exercises, which provide opportunities for arranging the fundamental elements of line, tone and color, so that there is a feeling of satisfaction in viewing the results. The aim is to obtain good harmony. Simple balance, both symmetrical and occult, will be taught and the need of dominant and subordinate elements made clear. Rhythm of movement throughout the design will be sought.

In these grades representation of isolated things does not furnish as adequate a motive as formerly, and the drawing now should be made with some further purpose in mind, e.g., its use later in design. More accurate observation and more correct representation of the things seen should be expected. Good drawings from other sources should be examined and may be copied—in part only—for the purpose of acquiring better technique. Never set children to copy a whole drawing.

Drawing from memory is recommended. This should follow several careful drawings of the object and should be checked up by further comparison of the drawing and the object drawn. No careless work should be accepted. After errors have been pointed out insist on a correct final representation.

In each grade there is one construction problem carried throughout. In grades VII and VIII it will be of the type of an Art note book. Whether in drawing or design it is necessary to take up various principles which should be carefully taught and mastered by the pupil. These are given in the various exercises and sketches. Notes should be made, that a clearer understanding of the essential features of the course may be mastered.

GRADE VII.

NOTE.—It is advisable to make a note book to hold Art notes and sketches relative to each exercise and to make this a real art problem throughout. Habits of neatness in note book work on other subjects should result.

Two sheets 9 x 12 drawing paper folded once and fastened together would make a signature 6 x 9, which might be sufficient for notes and sketches for two or three exercises. When the year's work is about over these signatures should be sewn together over tape and bound in a cardboard cover—which is part of an earlier exercise.

Begin by drawing a border in good position around each page. Plan the sketches to fill up the enclosed space, allowing a place for script printing relative to the exercise, and finish the page as you would a problem in design. When one signature is filled use another and so on until the year's work is completed. Sew the signatures together over tape as shown in Grade VI. Make the cover as an exercise and complete the book before the close of the school year.

EXERCISE I.

Exercises in drawing flowers and leaves at various angles or foreshortened and rendering same in accented outline and in light and shade. To render a branch including leaves and seed pods or flowers showing both foreshortened and overlapping leaves.

Time.

Four weeks.

Drawing paper 9 x 12, and later 6 x 9, good pencils.

Materials.

Drawing paper 9 x 12, and later 6 x 9, good pencils.

Aim.

1. To teach the drawing of foreshortened flowers and leaves and superimposed leaves.
2. To teach close observation of various details in leaf structure and arrangement.
3. To illustrate pencil technique in rendering in light and shade, showing values, and to render an example in accented outline.

Minimum.

To draw a flower in different positions, face view, side view, partly below the eye and such like. Guide lines in drawing foreshortened forms may be shown.

To draw various types of foreshortened leaves. Render in accented outline.

To render leaves as above, or leaves in front of others in such a manner as to indicate the position, in pencil values.

As a finished piece of work, to render a twig or flowers and leaves in pencil so as to exemplify many of the above characteristics.

Suggestions.

Good examples in abundance should be provided. Each pupil should have a specimen. On a page in notebook, beginning at the top, draw a series of flowers in various positions, but before doing so, question as to how it might be done. Explain the meaning of foreshortened, accented outline and values, giving definitions of the same. Render seed pods, both side view and sectional view and sectional view of flowers. Continue with the other exercises mentioned. See that the drawings are carefully planned on the sheet, so that it will present when filled an orderly arrangement, which will be ready for use later in design. Draw from memory and test for accuracy. Finish one good drawing of flowers, leaves, etc., on other paper than that used for the note book.

EXERCISE II.

Decorative compositions from plant form, introducing the principles of spacing and dominant and subordinate elements, values in colors.

Time.

Four weeks.

Materials.

Drawing paper, pencils, finders for each, water colors and brush.

Aim.

1. To teach the principle of dominant and subordinate elements and the arrangement of various shapes so as to look most pleasing.
2. To select, by use of finder, from a plant form a composition, so as to show good spacing, and dominant and subordinate elements.
3. To render in values of black, gray and white, interchanging these and comparing the effect.

Minimum.

Using notebook make series of small sketches showing dominant and subordinate elements, as (1) a book-cover, (2) flower and leaves, (3) central and two side doors in a building, or other examples. Indicate the dominant and subordinate elements. Find two or three compositions from the plant drawing in Exercise I by use of a finder. Redraw these, and, if small, enlarge to a suitable size in note book. In book make a series of four rectangles about $1 \times 1\frac{3}{4}$ and in these make a series of values in gray, from light gray to black. Select one composition from the above and render in values of gray to black, in three ways, (1) with background black, (2) background light gray, (3) background dark gray, and the other features expressed in harmonious tones of gray. Mount on other paper and compare.

Suggestions.

The main features to be taught carefully are:—(1) that in a composition the whole space should be so broken up that there are larger and smaller elements in a pleasing arrangement, (2) that there should be some one feature that is the dominant one, and this should be in a good position not against the side of the enclosure, nor exactly in the centre, unless the object is wholly symmetrical. Care should be exercised to see that the tones of gray are also well selected, and that the range of values is as wide as possible, very light gray to black. Make these ideas clear by exercises in note book.

EXERCISE III.

To teach the elements of spacing and proportion and balance as applied to various features in a building, as door, fire-place, window, rendering the designs in gray and black.

Time.

Four weeks.

Materials.

Note books, drawing paper, water colors, etc.

Aim.

To learn to plan areas in good proportion, with reference to the length and breadth of the rectangular spaces; to color in tones of gray, to finish in ink line with brush.

Minimum.

- I. In note book, plan a door showing:—(1) one panel well placed, (2) two panels side by side, (3) two panels one above the other. After determining the best size and proportion of the panels, redraw one on larger paper, finish in light gray wash and black line (use brush in vertical position).
- II. Plan the spacing for a fireplace, which is faced with square tiles, in two sizes, one fully twice the size of the other. Work in note book first, and when satisfactory, finish on larger paper. Use light gray to color the small tiles, and darker gray for larger ones. Finish in black line.
- III. Plan a three window opening with larger window in centre and smaller ones on each side. Plan spacing for the curtain, first in note books, later on larger paper, rendering the windows in light gray and curtains in darker gray.

Suggestions.

In deciding good proportions, it is well to make several examples beforehand and allow pupils to choose the best, and

give reason for the answer. In a one-panel door, the panel should be nearer the top than the bottom of door. In a two-panel door, one above the other, the smaller panel generally looks better above the larger. In the window, space for two side curtains and one across the top; make the top one of a different width from that of the side curtains. Compare the areas of the top and the side curtains and try to get relatively a good proportion. Practise rendering in ink line, before attempting on paper. The brush should be held vertically.

EXERCISE IV.

To make a poster alphabet. To plan a poster, space the elements of the same, and render in color.

Time.

Four weeks.

Materials.

Cross-section paper, pencils, paper 9 x 12, brush and colors.

Aim.

1. To introduce the wider and narrower strokes in poster letters as well as variety in spacing in the horizontal lines in E, F, H, A, P, R, etc.
2. To plan the spacing of the poster, to discuss the position of the dominant and subordinate parts, and the relative proportion of the various divisions. To space the letters to occupy the space allowed, etc.
3. To discuss the carrying effect of poster, and which colors carry best, according to the background color selected. To render the poster in the two colors as selected. Plan first in note books, stating reasons for each step.

Minimum.

A poster alphabet should be made on cross-section paper so as to fit in note-book. Select a suitable title for poster of original type and illustration and plan same on 9 x 12 paper as stated above. Finish the poster in two colors selected for best carrying effect.

Suggestions.

Plan the poster selected in a note-book, so that the pupil sees the reason for a definite plan. Such a poster as "Buy Alberta Coal," "Alberta Wheat is Best"; or in cities or towns, "Keep Our City Clean," "Paint Our Buildings," or other good mottoes from a practical standpoint should be selected. Try to make the letters of such color and size that they will be readily seen. Never permit copying another poster.

EXERCISE V.

To construct a book cover and to make cover design. To include border, title, illustration and pupil's name or monogram.

Time.

Four weeks.

Materials.

Cardboard, binder cloth for back, cover paper, cross-section paper, paste. Pencils, water color.

Aim.

To learn to make a fine type of line-letters, modified slightly. To space and make a book cover, including border, title, simple illustration, pupil's name or monogram.

Minimum.

To make a fine type of alphabet using cross-section paper, and discuss simple modifications of the letters. To construct the book cover and to space and make the above mentioned features on same.

Suggestions.

Take up the making of each letter (in note book) as (1) straight line letters I, H, L, F, E, T, (2) the slanting letters A, V, W, X, Y, Z, K, M, N, (3) the round type O, Q, C, G, S, (4) mixture of straight and curved strokes as U, J, D, P, B, R.

Then make the book cover as in Grade VI outline. The cover design is a problem in spacing or arranging and requires thought both as to border, size of letters of title, and general spacing within the border. Make first in note book so that each pupil understands the problem before he attempts to finish the cover.

EXERCISE VI.

To draw objects showing perspective. Exercises of various kinds arranged progressively should be carried out.

Time.

Five to six weeks.

Materials.

Note books, drawing paper 6 x 9, pencils. Other materials if possible, as glass in small frame to illustrate perspective, other illustrative material for circular perspective.

Aim.

1. To establish certain definite principles in drawing the appearance of objects.
2. By various drawings to exemplify these principles that they will be understood and retained by the pupil.

Minimum.

1. Objects appear smaller in distance.—Illustrate in note book by drawing a row of teepees or wigwams, or row of stooks, or other similar objects easily drawn.
2. Lines running away seem to converge to a point, and horizontal lengths appear to get shorter the farther away. Illustrate by drawing the rails and ties of a railway track, or planks of sidewalk when looking in direction which the walk runs.
3. Teach what is meant by horizon or horizontal line, or eye line (not the sky-line) in the above exercises. Take up the drawing of cylindrical objects. Illustrate by drawing a silo, showing hoops above and below the eye level, or select another more familiar example. Teach how circular objects appear when above or below the eye-level.
4. Teach the drawing of rectangular shaped objects when placed parallel to the glass which represents the picture-plane (this term need not be used; it is used here only to indicate the position of the object) or one point perspective.
5. Finish by drawing from the object on larger paper a rectangular shaped object such as a book. Show how the pupil may test out his drawing for perspective appearance. An object should be placed in front of each pupil. Finish in pencil showing different values in shading.

Suggestions.

Too much care cannot be taken with the introductory work that the principles may be carefully taught. These illustrations should be drawn in note book, and the facts clearly stated beneath the drawing. The aim is to draw *objects* properly, and to help us to do this we have to learn certain facts about the direction of various lines. It is unwise to make a perspective drawing of some imaginary object, if the object can be placed in front and drawn in the regular way. Better draw from an object and correct the drawing by the principles learned. These principles are simply an aid to help us to draw properly what we see.

EXERCISE VII.

Applied Art.—To apply principles of composition to the spacing and arranging of a school garden. Also to the planning or spacing of front of school house or ordinary house if in the city, and discuss good color scheme for painting same.

Time.

Four weeks.

Materials.

Cross-section paper, water color paper, water color materials.

Aim.

1. To discuss the arrangement of a garden, including a grass plot and flowers, as in a school garden, and methods of planting flowers, shrubs and trees. (This if at all possible should be actually worked out later in the Spring. Encourage the pupils to improve some spot about the home.)
2. To discuss the spacing and balance of the features in the front elevation of school house or residence. Discuss how it might be improved in appearance, and make drawing of suggested changes.
3. To discuss the painting of the house and the trim. To take up such matters as color harmony with the general background; the color of the other houses and best color harmony of such arrangement.
4. To render sketch or elevation in color as decided upon. To write notes in note book on results of the discussions.

Minimum.

To sketch or plan out grounds on cross-section paper, according to some scale, and plan out places for walks, grass, flowers, shrubs, trees. If time permits, render on better paper in washes of gray. Indicate by different depths of gray the particular feature which should be shown by key to colors at side of drawing. Draw front of house to scale as nearly as can be estimated. Discuss the size of windows, doors, other building details, and any ideas to improve same. Draw on good paper when completed. Discuss painting, and finish work in the colors decided upon.

Suggestions.

These are generally given. The exercises are much the same type as those in preceding problems. Correlate with nature study and agriculture, or horticulture. In coloring house, how can we harmonize the color with the background, or with other buildings on either side? What varieties of trim color might we use?

EXERCISE VIII.

Color study, to conventionalize leaf or simple plant forms to fill a rectangle or other definite shape. To make a simple stencil for border as for curtain and render in good color scheme.

Time.

Four weeks.

Materials.

The drawings made during the first exercises, paper 6 x 9, pencils, scissors or knives.

Aim.

1. To break up a rectangle in the manner suggested by a leaf or seed pod, having in mind the principles already suggested.

2. To plan as border, and to make the design into a stencil pattern, so as to repeat. (Symmetrical designs are suggested for this grade.)
3. To take up color theory and color harmonies in note book. To study harmonies in nature; match these, and use in coloring border.

Minimum.

Take up the making of designs from leaves, seed pods, etc., in note books, until some skill is attained. Adapt one as stencil cut-out, make border, and render in good color scheme, if possible from some flower or other nature source.

Suggestions.

A three-lobed leaf makes a simple motif, or two leaves and a berry. Always give a motif and work from that. Cut out several types, select the best ones. Make a symmetrical type of stencil and apply to object. If paper, it can be traced and colored later; if on fabric, use wax crayons, and set with hot irons applied to back of material. Test out all designs by the laws of composition previously taught.

EXERCISE IX.

To plan abstract designs in rectangles, using lower-case letter forms as motifs. Make designs for all-over pattern, such as may be used for end-papers in booklet.

Time.

Four weeks.

Materials.

Drawing paper, water colors, brush.

Aim.

1. To space a small rectangular shape using some small or lower case letters as f, m, r, t, etc., as motif in breaking up rectangle (use letters symmetrically, that is, facing both ways, and modified) to harmonize with shape.
2. To take up various methods of repeat, as half-drop repeat, etc., changing the direction of the unit in the pattern, etc. etc.
3. To plan from the above motifs a larger design that might be used as decoration for a concrete flower box. This must be made simple so that it could readily be added to the wooden form for concrete.

Minimum.

In note books, take up methods of repeat, and of changing direction of pattern, where an abstract design is used. Take a small rectangular area, and break it up in good arrangement by various letters as suggested, and make small repeat patterns from

units. Triangular shapes may also be used. Elements of border may be made and tried out in note books. For finished work an all-over pattern as for end-papers for book, 9 x 12, may be made by a block design. A full size abstract type of design for side of concrete box may be made. Color in tones of gray.

Suggestions.

The method of breaking up an area by using the motifs given is an excellent exercise if the results are criticized by the principles of composition, especially variety of spacing, harmony of line, and balance of parts.

EXERCISE X.

Finish work in note books, review work of year, bind in the book and fasten inside cover. The all-over pattern might be used for end papers.

Time.

Three weeks.

Materials.

Tape, thread and needle, thin muslin for back, signatures, end papers and the cover previously made. Other drawing materials as may be necessary to complete book.

Aim.

To complete the book. If any work inside is not well done or well arranged, have it worked over again.

To complete the making of the book, in its entirety, with the greatest care.

Minimum.

A book complete, pages well spaced, work neat, notes in script printing, well bound, with end papers well in place, and cover well made.

Suggestions.

This is a clean-up month. Examine every signature to see that the work in it is well done. The sewing over taps is the same as in Grade VI. It is the most serviceable method of binding a book, so that it will open readily.

SUMMARY.

Representation.

Object drawing, in which we teach various principles which are usually called the principles of perspective, is the aim of this course. Beginning with drawing foreshortened flowers and leaves, a series of exercises is arranged to bring out the principal features of object drawing involving simple perspective. Pencil technique, in expressing values is also stressed.

Lettering.

Poster letters of modified type are introduced, also modified capital letters for general lettering. Spacing of letters and planning of book cover and poster arrangement are associated.

Design.

Two features are emphasized in the work for this year: to lead the pupil to exercise more and more creative ability in making various simple designs, and to give him certain definite principles that he may learn to criticize his efforts on a reasonably sound basis.

Composition.

This means arrangement and is the basis of all art structure. The arrangement of various shapes in a plant composition, in a book cover, in a poster, and in various designs and page arrangements constitute some of the problems. In every instance observe the position of the dominant and subordinate elements, that the whole space is broken up in a good arrangement, and harmony of line is maintained throughout.

Color.

To review the principles of color harmony that have been previously taken up, analogous harmonies, complementary harmonies, and finding good harmonies in nature, chiefly from flowers, and to match these and note amount and density of each color. To discuss color harmonies in painting buildings.

Appreciation.

To study pictures, partly from the standpoint of composition, color tones and harmony, and the idea that the artist was trying to express. It is assumed that a too exhaustive treatment along these lines will not be attempted. See page 90.

Materials.

Paper.

Drawing paper 6 x 9 and 9 x 12, for books and posters. Cross section paper, to $\frac{1}{8}$ inch for alphabets. Construction paper 7 x 11 for binding booklet, also 9 x 12 for poster if good background color is chosen. Drawing materials, water colors, brushes, pencils. Cardboard $6\frac{1}{4} \times 9\frac{1}{2}$ size. Wood blocks $\frac{3}{4} \times 1\frac{1}{4}$ about, or linoleum blocks of about same size. Paste. Muslin for back of book.

"Sheep, Autumn" (Mauve) 756.

"Return to the Farm" (Troyon) 502.

"Night Watch" (Rembrandt) 718.

"Holy Night" (Corregio) 367.

"Christ and the Doctors" (Hoffman) 800.

"Sistine Madonna" (Raphael) 321.

"Planting Potatoes" (Millet) 514.

"Haymakers or Mowers" (Dupre) 601.

"The Mill" (Ruisdael) 708.

GRADE VIII.

NOTE.—Following the same method as that in Grade VII, each pupil is asked to make an Art note book, in which notes and sketches, explaining and illustrating the points of each exercise, shall be placed. This should lead to definite knowledge of the general principles underlying each exercise, and to a clearer understanding of art education generally. Great care should be taken that in this book both the planning of the cover and that of each page therein should exemplify the principles of design.

Two sheets of 9 x 12 drawing paper folded once should be sufficient for a signature for note book, and when filled should be laid aside and when the year's work is about completed these signatures should be sewn together over tape and bound in a cardboard cover as in booklet in Grade VI outline.

In using these signatures as note book, begin by drawing a line border in good position about each page. Plan the sketches and the notes that a good arrangement will result. In like manner plan the cover, as an exercise, and complete the book before the close of the school year.

EXERCISE I.

Exercises in drawing trees, showing characteristics of trunks, branching of limbs and general appearance. Make sketches of several examples, writing notes *re* leading characteristics, pencil rendering of leading types should be taken up. Finish by rendering a simple landscape having trees at various distances.

Time.

Four weeks.

Materials.

Drawing paper, 9 x 12 for notes, 6 x 9 for drawings. Good pencil.

Aim.

1. To study the shapes of a few characteristic trees, and to learn to express these with pencil.
2. To draw the trunk, limbs, and foliage in the simplest manner with pencil.
3. To draw a simple landscape in values using pencil.

Minimum.

To draw at least two types of trees in note books and write notes *re* same, and to redraw until the method is fairly well mastered.

Review pencil rendering and the use of values in landscape work. To combine the results in producing a simple tree landscape in pencil.

Suggestions.

Good examples of pictures of trees should be provided and the shape and nature of a certain tree examined, the trunk, the limbs, and the foliage. Draw in note books. Notes should be made, drawing each part and telling how it might be rendered in pencil. At least an evergreen tree and one other type should be studied carefully. Draw the trunk lightly and the main limbs, examining the nature of the growth, and general shape, and determine the nature of the strokes that would be most appropriate to render the foliage, in pencil. Draw as many types as time will permit, though the examples be not more than three or four inches high.

In rendering the simple landscape, note the pencil values that are necessary to bring out the ideas of distance.

EXERCISE II.

Decorative compositions from landscapes, including trees arranged to conform to the principles of spacing, to have dominant and subordinate elements, balance, etc. Render in a good color scheme, split complementary suggested.

Time.

Four weeks.

Materials.

Drawing paper, finders, note book, water colors and brush.

Aim.

1. To review the principles of good spacing, of the placing of dominant and subordinate elements, balance, etc.
2. To select one or more good compositions from the landscape drawn in Exercise I, or from a similar type of landscape from photo, in accordance with the principles just mentioned.
3. To review color theory, graying of colors, harmonies of color. To decide on using one or two definite split complementary harmonies and after graying each color to make a fine harmony, and color the composition just selected, using this color scheme.

Minimum.

In note book, make a series of good compositions, two or three at least, say 2 x 3 inches, rendered in ink line, or black gray and white. Discuss the principles necessary to assist the judgment in selecting a good composition. When mastered, take up color harmonies, review those given in Grades V and VI. Select at least two examples of split complementary harmonies, render another series of the above landscapes in these harmonies. Enlarge one of these to at least 5 x 7 inches, and color with one of the schemes selected; use black for shadows or accents.

EXERCISE III.

To plan a simple building, and space one wall of each of the several rooms. Make color schemes most suitable for each.

Time.

Four weeks.

Materials.

Cross-section paper, drawing paper, water colors, brush, note books.

Aim.

1. To attain a finer sense of proportion of areas, not only of length to breadth, but of one area to another.
2. To break up wall areas according to the plan of the house in accordance with laws of composition.
3. To discuss and carry out suitable color schemes for different rooms.

Minimum.

In note books, on cross-section paper, plan out a simple cottage say 24 x 36, to have a living room, dining room, kitchen, two bedrooms, and bath.

Plan out, in note book, wall spacing of three walls, one from each of three rooms.

Make a color scheme for each, discussing colors appropriate for each room.

(In making the spacing for each wall, the principles learned in Grade VII *re* doors and windows should be reviewed.)

Suggestions.

Carry out this exercise, as if it were an actual problem to be met. In color schemes if time does not permit to make a drawing to scale of the wall of a room, make a series of rectangles and show in a series the coloring you would choose for the ceiling, walls, trim, draperies. A discussion of actual materials used for decoration would be valuable.

EXERCISE IV.

To make a tree poster, including planning or spacing, lettering, illustration, etc.—poster alphabet.

Time.

Four weeks.

Materials.

Cross-section paper, note-books, paper, brush, colors.

Aim.

1. To introduce the wider and narrower strokes in poster letters. To show variety in the spacing of the horizontal stroke in letters, as in E, F, H, A, P, R, etc.

2. To plan the poster. To discuss the position of the dominant features, the relative proportion of each part.
3. In the color scheme, discuss the carrying effect of the poster and the suitability of colors to the idea in the poster.

Minimum.

The alphabet should be planned on cross-section paper, the plan of the poster should be made in note-books, and when satisfactory, should be enlarged on construction paper or other suitable paper, the illustration completed and poster finished with suitable border.

Suggestions.

Give the reasons why the poster should be carefully planned. Criticise several types of posters or advertisements along this line. Take time to make the letters correctly. Select the title for the poster along such lines as—"Beautify the home with trees," "Line our roads (streets) with trees," "Plant trees and shrubs about our school." Render illustration in a decorative manner. In painting the letters repeat the work until there is a strong color, evenly put on.

EXERCISE V.

Make modified line letters, using brush or lettering pen—capital, lower case, numerals. To plan a note book cover, using a decorative landscape as illustration. Make book cover and decorate as planned.

Time.

Four weeks.

Materials.

Cardboard, book binders' cloth, cover paper, cross-section paper, paste, water colors.

Aim.

1. To learn to make a line letter, of modified type, also lower case or small type letters, and figures.
2. To space a booklet cover, after having made the cover for the notes. To try a different type of cover arrangement than in Grade VII, using a landscape as motif for a decoration. To make letters by brush or pen which are uniform in line, but varied in style, as by raising the horizontal strokes in middle of the latter, or other simple changes in curves of certain letters.

Minimum.

In note books make an alphabet of line letters, using brush or No. 2 lettering pen and black color. This should only be done after practice on other paper. Plan the cover first in note books, using cut paper to space with. Plan the decoration from landscapes in previous exercises. Apply to book cover, and finish same ready to receive book part later.

Suggestions.

Take up the making of many of the letters as B, E, F, G, K, M, etc., modified slightly, then, how to make the small or lower case letters, then the numerals. After making same on cross-section paper these may be placed in note books, using three lines as guide lines.

Make book cover in same manner as that in Grade VI. Plan the cover in a somewhat different manner from that worked out in earlier grades. Plan as definite note book problem first, when satisfactory apply to note book cover.

EXERCISE VI.

Object drawing showing angular perspective. A progressive series of exercises should be carried out.

Time.

Five to six weeks.

Aim.

1. To continue the work in Grade VII, by establishing other principles to supplement those already given.
2. To deal with objects placed in an angular position, both of solid type as boxes, and of open type as a plain table.

Minimum.

1. Review the work of Grade VII, using note books, such as showing lines converging to one point as railway track, running straight ahead, with that of two tracks crossing at right angles and running away towards the distant horizon. With this as basis, introduce through the medium of telegraph lines, the appearance of solids made by joining suitable lines. Draw the lines at different directions, and note results.
2. Each (a) That when a rectangular solid is placed at an angle, the receding edges seem to run to two points on the horizon; (b) That as the object is turned slightly, the vanishing points change also; (c) That by holding a small rectangular finder (a piece of cardboard with a small rectangular opening in it) and looking through at the object, mark the nearest upper corner on the lower edge, and the receding edges on the sides of the opening. By applying the finder to your paper you should get a fairly correct direction of each line to the vanishing points. Obtain these key lines for several rectangular objects, one at least placed above the eye. Try also to get the lines of the corner of your class room.
3. Complete on larger paper, drawings of rectangular objects, as suitcase, or similar rectangular object (two objects may be necessary, that each pupil may see one at an angle) and a table, or interior corner of the room. Draw the object as each sees it, correcting the perspective accurately as mentioned above.

Suggestions.

These are given in a general way above. Never divorce perspective from object drawing. As this work is the most difficult during the year, the greatest care should be exercised in preparing the lessons, and presenting same that definite and progressive instruction should result. In drawing an object it might be well to fasten the drawing paper to a larger sheet as a newspaper, by pins, so that in testing out for perspective there will be sufficient space to determine the accuracy of the perspective.

EXERCISE VII.

Art applied to landscape gardening. To apply the principles of composition to the planning of a small city park, the size of city block, or in rural districts that of a quarter section, showing arrangement of various spaces as for trees, shrubs, walks, fences, etc. For cities—Discuss the improvement that might be made in the front view of an ordinary business block. In the rural sections, plan the best arrangement for the buildings on such a section, fences, walks, trees, shrubs, flowers, etc.

Time.

Four weeks.

Materials.

Cross-section paper, water color paper, colors, brush, note books.

Aim.

To correlate with nature study and agriculture or horticulture, in planning grounds as suggested, and in methods of planting shrubs, trees, flowers, and arranging open spaces where thought best.

URBAN.—

1. To plan a city park or the ground along a residential block, so that there might be some uniformity in treatment of trees, shrubs, flowers. If houses are set well back, such ideas as hedges, clumps of shrubs on the boulevard, and other features as may be decided upon. Encourage actual work.
2. From a photo of some plain business block, discuss how it might be improved, by spacing in different storeys, window and door arrangements, cornice, etc. Make a drawing of the original, and then show how it might be improved in appearance, using note books. Cuts of fine buildings might be put in note books, and notes made as to the nature of the attractive features. Would suggest keeping to business blocks only.

RURAL.—

1. Plan out a quarter section, a real one if possible, that is, one typical of the neighborhood, noting waterways, sloughs, hills, etc. Where should clumps of trees be planted, where rows of trees, where a tree nursery, where trees might be started from seeds, or small plants. Designs for gates, fences, etc., may be made.

2. Plan likewise the grounds about the buildings. Draw the plan of the front of the house and show color scheme for same.

Suggestions.

This exercise is a practical working out of the principles of art to a real home problem. Pupils should be encouraged also to bring the best examples from magazines and mount in note books. While the drawing and planning should be very carefully kept in mind, the personal problem with each pupil in attempting to carry out the ideas should be dealt with, and an effort to point out what it means to a community to have surroundings in keeping with the best anywhere.

EXERCISE VIII.

Color study, conventionalizing tree forms, both as separate units or to fill a definite shape, as rectangle. To use as stencil, or as wood block print, or as fillet crocheting pattern, or simple for stencil, or wood block.

Time.

Four weeks.

Materials.

Drawings of preceding exercise square section paper, materials for stencil, or wood block, etc.

Aim.

1. With tree form as motif, to plan out simple design units, both as square type, as for fillet crocheting design, or more open as for stencil, or block.
2. To adapt the design for a border, or all-over pattern, or for block.
3. To review color theory, including color harmonies. To study harmonies from various sources, as good colored pictures, good examples of color printing from nature. Select a good scheme and render the designs in these colors. This is mostly note book work.

Minimum.

This is a varied exercise, and depends upon interests of pupils. Girls would work out from a tree motif, fillet crocheting designs, stencil patterns, or applique, etc. Boys,—wood block designs, tile patterns, as for cement. Several different designs should be worked out in note books.

Suggestions.

Would begin with cross-section paper, working out various designs in a manner similar to squared animal designs; after some invention is manifested, the squared form may be omitted for simple curves. The element of originality should be always prominent. In dealing with colors, the work of color analysis should have a prominent place now. These should not be made

too difficult but rather to stimulate observation for fine color schemes. Wood block designs may be used to print end-papers for booklet.

EXERCISE IX.

Designs using letters as motifs, as simple monograms of two letters, initial letters, and to plan a simple bookplate suitable for booklet.

Time.

Four weeks.

Materials.

Drawing paper, brushes, note books.

Aim.

1. In small rectangular spaces to plan simple monogram of two letters, or an initial letter.
2. In a larger rectangular space to design a simple bookplate, using a simple landscape as decorative motif, or tree, or book may be used or such other motif within the scope of the above exercises.

Minimum.

In note books the planning of a monogram, an initial letter, and a bookplate, which might include the monogram, and perhaps the initial letter in reduced size. Such bookplate as "His Book," then motif, and below name, "John Smith," the monogram may be placed at the top.

Suggestions.

The problem is largely to make a bookplate, to paste inside the cover of any book. In the monogram keep to plain types, two letters only. After a few examples are worked out in note books with the aid of the teacher, each pupil should design his monogram, also bookplate. These may be rendered in black and white, using water color, black.

EXERCISE X.

Finish any work necessary in note books, bind the signatures together over tape, and paste down the end leaves inside the cover.

Time.

Two weeks.

Materials.

The usual materials as thread, tape, muslin, and the back which was made in a preceding exercise.

Aim.

To complete the book.

Suggestions.

This is a clean-up month, the work of the year should be trimmed, and the note book completed. The method of sewing the book is similar to that of Grade VI.

SUMMARY.

Representation.

A fairly thorough course is given in drawing trees, as nature drawing, and in drawing rectangular objects placed at an angle and testing the accuracy or correctness of the drawing by the rules of angular perspective. Pencil technique, in expressing values, is also stressed.

Lettering.

Poster letters showing two widths of stroke, and brush letters, modified somewhat, should be attempted. Such problems as spacing a book cover, a poster, and bookplate are required. Monograms and initial letters of simple type should be designed.

Design.

As in Grade VII, this should lead more and more to creative effort on the part of the pupil. The tree is used as a motif, and an effort should be made to secure some creative effort in adapting this motif to several purposes. A pupil should learn to criticise his efforts by design principles.

Composition.

The arrangement of the elements in the composition according to definite principles, constitutes the work for the year. Such exercises as planning a decorative landscape, a book cover, a poster, wall of a room, bookplate, tile patterns, give ample opportunity to exercise creative effort, which should be constantly checked up by the principles of composition.

Color.

To review the principles of color theory and harmony of the previous grades, while the addition here of split color harmony, and of analysis of simple but good color harmonies from picture sources, good prints, etc., should receive attention.

Appreciation.

To study pictures in a more exhaustive manner than in the lower grades, to note the general composition or planning of the picture, the color tones if expressed, the idea or source of the picture in the mind of the artist, and the appreciation of his efforts. It is assumed that a too exhaustive treatment along these lines will not be attempted. See page 90.

Picture Study.

- "The Horse Fair" (Bonheur) 538.
- "Aurora" (Reni) 388.
- "Avenue of Trees" (Hobbema) 752.
- "Dance of the Nymphs" (Corot) 485.
- "By the River" (Lerolle) 619.
- "Pilgrims Going to Church" (Boughton) 1339.
- "Sir Galahad" (Watts) 940.
- "Joan of Arc" (Lepage) 594.
- "The Madonna of the Chair" (Raphael) 324.

Materials.

Paper—Drawing paper 6 x 8 for general problems, 9 x 12 for booklets, posters, etc. Cross-section paper $\frac{1}{8}$ inch section. Materials for binding books, as given in Grade VII outline.

Writing

INTRODUCTORY.

The course in Writing, as outlined herein, is the result: of very complete investigation on the part of the Curriculum Committee of various systems now in general use; of careful examination of many compendia and writing manuals; of extended correspondence with writing experts; of a study of the results of psychological investigations of this ability; and, lastly, of consultation with scores of successful teachers throughout the Province.

Freeman says: "The writing movement should be a combination of the movement of the arm and the fingers. The arm movement is more prominent in the forward progress from letter to letter, and the finger movement in forming the individual letters.

"The writing movement, particularly in the early stages, should be divided into series of units of movements, separated by very slight pauses. It is not continuous and uniform in speed. The units should correspond to natural divisions in the form of the letters, which are usually made up of an upward and a downward stroke. On these principles the present course has been based."

Writing is one of the fundamental subjects in any Elementary School Curriculum. Its function is to give expression to thought, and it is a substitute for speech. As a mechanical art, Writing (or Penmanship) ranks in importance with English and Mathematics, and should be taught as efficiently.

Aim.

The art of writing is acquired by the teaching process. The aim in teaching this subject is to develop in the pupil the power to write, with reasonable speed, a graceful and legible hand. This ability can be developed most readily by dividing the teaching into three parts: (a) the teaching of a proper writing position, (b) the teaching of correct letter forms, and (c) the teaching of an easy natural system of movement in the senior public school grades. The key to success is "an insistent demand for the pupil's very best effort in all written work."

Materials.

The materials used in the writing lesson will determine to a large degree the type of work produced. In the primary grades the materials required are blackboard, chalk, unglazed paper, and a large soft pencil. In the higher grades ink, pens and smooth paper are required. The ink should be smooth flowing, the pen-

holder large enough to be easily held with the fingers, and pen points of medium size. Ruled paper, exercise books, or writing pads of smooth paper may be used, while writing manuals for pupils and teachers are recommended.

Method.

The primary object of a writing lesson is to teach the pupil the art of making letter forms according to a recognized standard. During the first three years of his school life the pupil should be carefully taught the correct forms of all small letters, capitals and figures. Grades I and II will use crayon and pencil, the use of pen and ink being introduced in Grade III.

Beginning with Grade IV some attention should be given to free arm movement exercises, with a gradual adoption of the muscular movement system in Grades V to VIII. Good letter forms must be secured in all grades and teachers are directed not to sacrifice good form for movement. The skilful teacher should be able to secure a good writing position, correct letter forms and a graceful easy style in the senior grades. The very best work of which the pupil is capable should be required in all written work in all grades.

Position.

Good position is most important in the teaching of writing. It promotes health, self-control and good writing. A good writing position is never strained or unnatural, but is easy and comfortable. Teachers should insist on correct position in all written work. If this is done it will be found that most of the bad habits so common will be eliminated.

Body.

The pupil should sit in the middle of the seat, facing the desk squarely. The feet should rest flat on the floor, with the body leaning slightly forward. Where the desk is not wide enough to permit of this position, the body may be turned slightly to the left, but this should not be necessary in the junior grades.

Arms.

The arms should rest lightly on the desk, with the left hand resting on the paper, to hold it in position. The right elbow should be near the corner of the desk, with the forearm resting on the desk. The wrist should be held up, and the natural movement of the arm should not be restricted. Avoid forcing the pupil into any strained position, but guide him into assuming a comfortable correct position.

Hand.

The right hand should hold the pencil or pen, while the left hand holds the paper in position. The pencil or pen should be held by the thumb, first and second fingers, the weight of the

hand resting on the nails, or the ends of the third and fourth fingers. The pupil should not be allowed to write with the hand resting on its side. It should be kept as near level as possible, with the third and fourth fingers used as supports. Slight modifications may be adapted to the needs of individual pupils.

Pencil.

The pencil or pen should be held between the thumb, first and second fingers. The thumb should be at the left side, the forefinger on top, and the second finger to the right and slightly underneath. The pencil should be held against the forefinger, just in front of the knuckle. Care must be taken to see that the pupil does not let it slide down into the hollow between the thumb and forefinger. The point of the pencil or pen should be about one inch from the end of the first finger.

Paper.

The paper should be placed on the desk at a slight angle toward the left, and nearer the right than the left side. It should be so placed that the edge of the paper is parallel with the arm. Where desks are so narrow that the body has to be turned toward the left, the paper will keep the same relative position with the arm.

Teaching.

The child is a born imitator, hence in teaching the art of writing, *showing* is preferable to *telling*. The teacher should write a uniform and legible hand, using the correct form at all times. The child will attempt to imitate what the teacher does and how he does it, so that teachers who are themselves good writers have a marked advantage in the teaching of this subject. Good blackboard writing is an inspiration to a class, and can be attained by most teachers with reasonable effort. Teachers should set an example to their classes in neatness and form in all blackboard work. A set of well-made small and capital letters, and figures, should be kept in a conspicuous place in the room.

The writing lesson should be taken by itself, and carefully supervised. If all the room cannot be taken together, those not writing should be given other seat-work. Retracing and copying of correct letter forms, both on the blackboard and at the seat, should be given in the junior grades. Outstanding errors should be pointed out and corrected. Plenty of practice should be given in writing words and sentences. Every written composition should be an exercise in writing. "If the child can readily use the right hand, he should do so. If he has very strong preference for the left hand and finds it more difficult to use the right hand, he should be allowed to use the left."

Time.

One hundred minutes per week is recommended for all grades. In the primary grades, two ten-minute periods per day—and in the more advanced classes, a single period of twenty minutes per day—will be found best.

Speed.

The question of the speed which should be maintained in writing needs but little attention in the primary and junior grades, where position and form are the important considerations. In the advanced grades, however, pupils should be encouraged to secure a reasonable speed, increasing with each grade. About forty letters per minute should be attained by pupils in Grade III, increasing at the rate of ten letters per minute for each succeeding grade. Care should be exercised not to insist on speed at the expense of good form.

***Writing Scales.**

Standard scales for measuring and grading the writing of each grade are recommended. By the use of these scales it is hoped that a reasonably uniform standard of writing may be secured throughout the schools of the Province.

The characteristics of good writing are legibility, uniformity, correct spacing, and evenness of the line. A slight angle from the perpendicular is recommended, and a similarity of slant and height of letters should be maintained. The writing scales should be kept on the wall, easily accessible to the pupils, who should be encouraged to compare and measure their own writing with the standard scale.

*Until a provincial scale has been evolved any standard scale may be used. Copies of the best scales are kept in stock at the Libraries Branch, Department of Education, Edmonton.

Value.

One of the insistent demands of modern society is that our schools shall develop in their students the ability to write legibly with a reasonable speed. Good penmanship is not merely an accomplishment for the few who have a natural aptitude for writing well, but is rather a social and business asset which is worth far more than it costs to acquire.

In view of the importance of this subject, it should receive more attention than is usually given to it in our schools at the present time. A place on the time-table is not enough; writing *must be taught every day*, in order that pupils may become as efficient in this subject as in any other subject of the curriculum. By careful practice, and persistent effort, most persons can acquire the ability to write a graceful, legible hand.

The Problem of Writing in Rural Schools.

The problem of teaching writing in ungraded schools should not prove a difficult one. The school should be divided into two groups, primary and advanced. At first the beginners may have to be taken apart from those more advanced in Grades I and II. It is not necessary to divide the writing groups according to grades, and a division according to their writing ability may be found more satisfactory. Either or both of these groups may be subdivided for instructional purposes. If at all possible the primary group should be given two ten-minute periods of instruction daily, the advanced group receiving instruction for one period of twenty minutes. The work as outlined for the different grades should be adapted to the ungraded school conditions.

OUTLINE BY GRADES.

GRADE I.

Method—Blackboard.

The first lessons in writing should be on the blackboard. A space of eighteen or twenty inches is sufficient for each pupil.

The pupils should be taught to stand on both feet, facing the board. Short pieces of chalk should be held between the thumb and fingers, pointing toward the palm of the hand. Pupils should first retrace large letter forms of the simplest type, and after some practice in retracing, they should be asked to reproduce or draw the same letter forms from a copy placed above. It is recommended that each letter or word be taught on the board before the pupil is asked to write it on paper.

Seat.

The first lesson at the seat should be the teaching of correct position. In fact, so important is this matter of position that it should be insisted on in every writing lesson. The correct method of holding the pencil should be taught, using the unsharpened pencil. Give the pupil practice in lifting the pencil from the desk with the left hand, and placing it in correct writing position in the right hand. Large copies of letters should be placed on paper by the teacher, and retraced by the pupils. The unsharpened pencil should be used at first, until a correct position is secured. Copying large letter forms may then be introduced, using the sharpened pencil.

Only the very simplest forms of script writing should be attempted at first, the letters being taught in the order of their simplicity. The following order is suggested: i u n m e o a d t s r w c v x p l h b k j g q f y z. Easy combinations of these letters into words should be introduced gradually, the figures as required, and the capital letters used in writing the pupil's name. Writing and composition are closely allied, and every written exercise should be closely supervised in order to prevent bad habits in position, pencil-holding and letter formation. All the work should be large, the small letters about one-half inch, and loop letters one inch, in height in this grade.

Materials.

The lower portion of part of the blackboard should be reserved for the use of the pupil. Crayons and erasers are required, and pupils should be taught the proper use and care of these articles.

For seatwork, unglazed blank paper is best for the early work. Later, unglazed ruled paper should be used, the lines being about one-half inch apart. Small letters should be made the full distance between the lines, the loop letters and capitals the height of two lines.

The pencil should be large, with a large soft lead. Ordinary lead pencils are not suitable for Grades I and II.

Time.

Two periods of ten minutes each per day. In addition to the time given to the actual writing lesson, all written composition work should give additional writing practice.

GRADE II.

Method.

The work of the Second Grade is largely a continuation of the first year's work. All the small letters, capitals, and figures should be taught in this grade, with combinations into words and sentences. Letter forms should still be large. Outstanding defects and errors should be pointed out and corrected. The pupils should be encouraged to criticize their own work, and compare it with the standard forms available. Encourage the poor writer by giving a little praise when possible. Work on the blackboard should be continued. All writing should be closely supervised by the teacher.

Materials.

Blackboard, crayons, eraser, large soft pencil, unglazed ruled paper.

Time.

Two periods of ten minutes each per day.

GRADE III.

Method.

Pen and ink should be introduced in Grade III. Great care should be exercised to see that no bad habits are formed in the transition from pencil to pen. It is not necessary to give pen and ink to all the class at the same time, but to those pupils who satisfy the teacher that they have acquired a good position and can make correct letter forms.

In order to write well with pen and ink, a light touch is required. The size of the letters may now be slightly reduced. The proper slant, correct spacing, uniformity and evenness of the line should be taught and insisted on in this grade. Capitals, small letters, and figures should be thoroughly reviewed, with careful supervision of all written work.

Materials.

Soft pencil, unglazed and glazed ruled paper, smooth flowing ink, medium pens, blotters.

Time.

Two periods of ten minutes each per day.

GRADE IV.

Method.

With the essentials of good writing position, and correct letter forms now well mastered, the final problem is to secure an easy graceful movement. In this grade it is recommended that easy movement drills be given at the beginning of the regular writing lesson. In these movement exercises the arm should rest on the muscle of the forearm, the wrist free of the desk, the point of the pen and the third and fourth fingers touching the paper. Simple rotary drills should be practised in order to develop a free easy movement. Teachers should not insist on the muscular movement in the regular written work, but allow it to develop naturally without detracting from the handwriting already attained.

Materials.

Good quality paper, medium pens, ink, blotters.

Time.

One twenty-minute period per day.

GRADES V TO VIII.

Method.

The final handwriting of the pupil will now begin to be formed, and a definite interest and desire to improve the writing may arise at this time. More practice should now be given in movement exercises, and an effort should be made to gradually introduce the forearm muscular movement method of writing. In doing this, however, teachers are advised not to expect satisfactory results in all cases, and where pupils have already acquired a good legible hand, it should not be sacrificed in an effort to force muscular movement. With skill and patience, a graceful easy movement should be acquired, together with good letter forms.

In the senior grades, the fine points of good penmanship should be mastered. The size of the writing should be reduced, graceful curves and optional letter forms should be taught. There should be no omission of the distinctive features of the letters, and no addition of needless ones.

Every lesson in the senior grades should begin with forearm movement drills and exercises. Proper position, penholding, and letter forms must be maintained. Teachers must set a standard, and insist on legible writing in all the pupils' written work. Practice should be given in writing capitals, small letters, figures, words, sentences, business forms, social and business letters, and the addressing of envelopes. All written work should be supervised and only the pupils' best efforts accepted.

Materials.

Good quality paper, medium pens, ink, blotters.

Time.

One twenty-minute period per day.

Index

	Pages
Accuracy insisted upon.....	8, 16, 18, 24
Africa.....	68
Agriculture in British Isles.....	72
Air.....	59
Alberta.....	54
Animal Relationships.....	51
Animals—	
Grade I.....	39
Grade II.....	43
Arithmetic—	
Aims, General.....	8
General Suggestions.....	8
Aims by Grades—	
Grade I.....	9
Grade II.....	11
Grade III.....	13
Grade IV.....	15
Grade V.....	18
Grade VI.....	20
Grade VII.....	22
Grade VIII.....	23
Arithmetic Suggestions—see Suggestions.	
Arithmetic outlines of work—see Scope.	
Art Course in Rural Schools.....	82
Art for General Course.....	135
Asia.....	68
Australia.....	74
British Empire.....	71, 73, 74
British Isles.....	72
Canada.....	61
Cities of Alberta.....	55
Cleanliness.....	36
Climate of Canada.....	62
Contents.....	3
Courtis Tests.....	21, 23
Decimals.....	22, 23
Denominate numbers.....	13, 15, 19
Distribution of time—Writing.....	158
Dominion of Canada.....	61

Elementary Science—	Pages
Introductory.....	26
What is it?.....	26
Place in curriculum.....	27
Aims in.....	28
Material.....	28
Suggested organization for ungraded schools.....	29
Elementary Science by Grades—	
Grade I.....	34
Grade II.....	38
Grade III.....	41
Grade IV.....	46
Grade V.....	50
Grade VI.....	57
Grade VII.....	66
Grade VIII.....	70
Eurasia.....	68
Europe.....	68
Fractions.....	20
Games.....	8, 10, 11
General introduction.....	5
General Course—Art—Grades VII and VIII.....	136
Geography—	
Grade III.....	44
Grade IV.....	48
Grade V.....	53
Grade VI.....	60
Grade VII.....	67
Grade VIII.....	72
Health of School Children.....	33
Heat.....	59
How to Study a Picture.....	77
Industrial Arts—General Aims.....	80
Outline by Grades—	
Grade I.....	83
Grade II.....	91
Grade III.....	99
Grade IV.....	108
Grade V.....	117
Grade VI.....	126
Grade VII.....	135
Grade VIII.....	146
Land Survey in Alberta.....	55
Limits of Work.....	12

Lists of Pictures by Grades—	Pages
Grade I.....	90
Grade II.....	99
Grade III.....	108
Grade IV.....	116
Grade V.....	125
Grade VI.....	134
Grade VII.....	145
Grade VIII.....	155

Materials required Industrial Arts—

Grade I.....	90
Grade II.....	99
Grade III.....	108
Grade IV.....	117
Grade V.....	126
Grade VI.....	134
Grade VII.....	145
Grade VIII.....	155

Measurements of stacks of hay.....	25
------------------------------------	----

Minimum requirements in Elementary Science—

Grade I.....	37
Grade II.....	41
Grade III.....	45
Grade IV.....	49
Grade V.....	56
Grade VI.....	64
Grade VII.....	69
Grade VIII.....	75

Mining in British Isles.....	72
------------------------------	----

Nature Study—

Grade IV.....	47
Grade V.....	51
Grade VI.....	58

New Zealand.....	74
------------------	----

Number symbols—introduction of.....	11
-------------------------------------	----

Percentage, an application of decimals and fractions.....	22
---	----

Physiology and Hygiene—

Grades I-IV.....	36
Grade V.....	55
Grade VI.....	63
Grade VII.....	69
Grade VIII.....	74

Picture Study.....	77
--------------------	----

Plant Relationships.....	53
--------------------------	----

Problem work—introduction of.....	17, 20
-----------------------------------	--------

Problem work—character of in Grade VI.....	22
--	----

Railroads of Alberta.....	54
---------------------------	----

Roman notation.....	11, 13, 15, 17
---------------------	----------------

Sample lessons—picture study.....	78
Scope of the work in Arithmetic by Grade—	
Grade I.....	9
Grade II.....	11
Grade III.....	13
Grade IV.....	15
Grade V.....	18
Grade VI.....	20
Grade VII.....	22
Grade VIII.....	23
“Shoeing the Bay Mare”.....	79
Sky Study.....	45
Soil.....	59
South Africa.....	74
Special features of the Industrial Arts Course.....	81
Standard Tests.....	14, 21-23, 159
Suggestions in Arithmetic by Grades—	
Grade I.....	9
Grade II.....	11
Grade III.....	14
Grade IV.....	16
Grade V.....	19
Grade VI.....	21
Grade VII.....	23
Grade VIII.....	24
Suggestions re Elementary Science Course.....	30
Summary—place of in Industrial Arts.....	82
Grade I.....	89
Grade II.....	98
Grade III.....	107
Grade IV.....	116
Grade V.....	124
Grade VI.....	133
Grade VII.....	144
Grade VIII.....	154
Supplementary Reading—	
Grade I.....	38
Grade II.....	41
Grade III.....	45
Grade IV.....	49
Grade V.....	56
Grade VI.....	65
Grade VII.....	70
Grade VIII.....	76
Trade and Commerce of Canada.....	62
Trade Routes.....	73
Unitary method.....	24, 25
United States.....	63

	Pages
Water.....	60
Writing—Introductory.....	156
Aims in.....	156
Scales.....	159
In Rural Schools.....	159
Outline by Grades—	
Grade I.....	160
Grades II and III.....	161
Grades IV-VIII.....	162

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